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VIRGINIAN BOTANIZING UNDER RESTRICTIONS

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(Plates 770–806)

Part I. Field-Studies of 1942 and 1943

At the approach of spring in New England in 1942 my former student, Professor Ernst C. Abbe of the University of Minnesota, then spending a year in research at the Gray Herbarium, was persuaded without too much pressure to contribute the use of his new Ford and to join Mr. Bayard Long and me for a short period of botanizing in southeastern Virginia. The need to go at once to the region arose through the pressure for housing near Camp Lee, with the result that our former headquarters at Century House, south of Petersburg, had been wholly taken over by Army officers and our great stock of driers, ventilators, press-frames, tramping clothes, etc. had been temporarily stored in a shed. There was no place left near Petersburg for such unessential people as mere botanists and we would have to move.

Abbe and I drove from Cambridge, with spring still far in the offing, and on the afternoon of April 15th called in at Elkins Park for Long and, taking a thinly settled route (via Glen Burnie, LaPlata and Port Conway) out of Baltimore, reached Fredericksburg for the night. Starting from Fredericksburg on the morning of the 16th we decided to drive down the north side of the Rappahannock to the Port Conway-Port Royal bridge,

thence to Petersburg. We might thus add something to the *Checklist of Plants of the Washington-Baltimore Area,* which covers the region south to the Rappahannock. About three miles southeast of Falmouth we were attracted by a brook cutting a ravine through the woods and by the conspicuous display of such plants now in flower or fruit as *Arabis laevigata*, *Stellaria pubera* and *Corydalis flavula.* Parking just off the road at the eastern end of the bridge we stepped into a colony of *Ranunculus abortivus* var. *indivisus* Fernald in Rhodora, xl. 418, pl. 518 (1938), the extreme of the species characteristic of bottomland woods of the Nottoway, ninety miles to the south; and when, a little farther on, we were puzzled by the *Cerastium* of the roadside-fill and found it to be the European *C. brachypetalum* Desportes, which has been known in America only from roadsides of Southampton County, Virginia, we felt that we were promptly getting into stride. But we were obligated to reach Petersburg and to move our collecting equipment to new quarters. Our chief concern was not the Washington-Baltimore Flora.

In the autumn of 1941 we had found not very far down river from Port Royal a fine bank of naturalized trees and shrubs and we wanted to secure flowering material of *Vinca major* L., which abounds there. So we took a little time to drive out to the home of Mr. and Mrs. Snowden on the river-bluff northwest of Return. After a visit with our hosts we reëxamined the colony of naturalized species along the river[1] and among them, unnoted the autumn before, there were *Ulmus procera* Salisb., the English Elm, and the American *Philadelphus inodorus* L. Then we went to the woods northeast of Loretto where, the preceding October, *Poncirus trifoliata* (L.) Raf. was fruiting[2], hoping to get good flowering material. Luck was still with us, the shrubs being in the prime of flowering. Since the day was rapidly passing we then decided to drive from Tappahannock without stop to Petersburg. We did pretty well, stopping first for a few moments to look into a wet woodland glade where we found two species rare in southeastern Virginia, *Viola cucullata* and *Symplocarpus foetidus;* but when we came to the broad, green, wooded bottomland of the Pamunkey, slightly north of Old Church, we had to get out for just a peep. The usual plants of such habitats

[1] See Rhodora, xliv. 372 (1942). [2] Rhodora, l. c.

were there, *Clematis crispa*, *Cardamine bulbosa*, and a perplexing member of the *Ranunculus hispidus*-series, and with them *Viola pensylvanica* Michx.[1], rare on the Coastal Plain. The great surprise, however, was acres and acres, as if native, of splendid flowering clumps[2] of the Old World Summer Snowflake, *Leucojum aestivum* L., as thoroughly at home as any squatter and making a display which we shall never forget.

While we were busily exploring this bottomland we heard excited voices of Negroes and the hurrying of feet on the road near by; and when we came up from the woods, a man, sauntering quietly along the road, waited for us to greet him and to explain our strange doings. The colored women had rushed excitedly to his filling-station to report three terrible monsters down on the bottomland across the river, one of them with an axe (my little hand-pick), one with a can of dynamite (vasculum), the third with a big pack on his back (Long's field-press). The women had "runned and runned and runned" and were completely out of breath and greatly frightened. Thus the three devotees of what Linnaeus called "our guileless science" were unconsciously starting the reputation which it became difficult to live down in succeeding days in Virginia. The proprietor of the gasoline-station told us of the vast extent of the bottomland-woods, of the fresh tidal flats near by and of his readiness to guide us about the region, and we promptly arranged to employ him and his motor-boat in midsummer and autumn, then little realizing that midsummers and autumns would pass before we should again see the Pamunkey.

The roadside-fill (soft shoulder) near where we had parked the car was carpeted with two wanderers from Europe, *Teesdalia nudicaulis* (L.) R. Br. which we had only once found in the state (on a fill in Sussex County) and *Holosteum umbellatum* which we subsequently saw in other such habitats. The large number of Europeans suddenly appearing on these recently made soft shoulders (these, *Cerastium brachypetalum*, *C. tetrandrum* Curtis, and other European species) make one wonder about the source of seed sown on the soft shoulders of new roads in eastern Virginia.

[1] See Rhodora, xliii. 500 and 616 (1941).
[2] See Rhodora, xliv. 390 (1942).

Six or eight miles below Petersburg we found a place to sleep—in cabins where they were asking and getting $4.00 a night for each bed over the week-ends from families visiting loyal sons and brothers at Camp Lee, twelve miles away. There were no "ceilings" on cabins. Only as a special concession were we taken in on a Friday night, for the cabins were being rented only Saturday and Sunday nights during the activity at Camp Lee. Finding next morning that the Petersburg region was no longer available as a home, we decided to try Waverly, twenty-five miles to the southeast, a village in the center of good botanizing ground and at the junction of good roads. We had formerly enjoyed the hospitality there of Mrs. Carter and her daughter, Mrs. Fleetwood, in their large old house, and we decided to try there; but Mrs. Fleetwood, we promptly learned, was at Fort Eustis as hostess and the old house was occupied by the family of an Army officer, who was forced daily to make the trip to and from Camp Lee. Southeastern Virginia was in the hands of the Army. Happily, our friend, Mrs. Calvin Horn, who, with her husband, runs an automobile- and gasoline-station at Waverly, was able to suggest a new home and in the evening we were established in the roomy and comfortable house of Mr. and Mrs. James Thompson and our equipment was stacked and ready for use.

Promptly after breakfast on the 17th we started eastward to take a cross-road north to the James River. Only a few rods outside the village Abbe spied a fine colony of *Iris verna* in beautiful flower. It must be photographed. For three minutes he tested light and distance, with his camera pointing down to the innocent *Iris*, passing cars slowing down to watch the proceedings. Then we went on to the James River, visiting then and two days later areas above Claremont, at Claremont Ferry and at Burwell's Bay below Rushmere, and introducing Abbe to the complexities of the eastern Crabapples, now in bloom, and to such fine natives as *Cardamine Douglassii* and *Sedum ternatum*. On the weedy and turfy shore at Burwell's Bay the little *Stellaria media* var. *glaberrima* G. Beck[1] made carpets with *Ranunculus parviflorus* and we here extended the range inland from the outer coast of the odorless, onion-like *Nothoscordum bivalve*.

[1] See Rhodora, xlii. 451 (1940).

We were specially anxious to show Abbe the big white-flowered *Erigeron scaturicola* Fernald in RHODORA, xliii. 524 and 654, pl. 695 (1941), which grows in the deep and viscid, dripping wet lime-marl under the crest of the bluff west of Burwell's Bay. We found typical *E. philadelphicus* on the beach, then plants like small *E. scaturicola* but with pink, instead of white, rays began to appear and finally, high up under the dipping crest, just where a magnificent mass of white-rayed *E. scaturicola* had formerly grown, there was an equally vigorous clump of plants with deep pink ligules. It was difficult to believe and I, naturally, wanted to get rooting specimens. These, after he had slipped back several times on the wet marl, Abbe dug and threw down. White-rayed *E. scaturicola* was now pink! The dry material was stored in a pigeon-hole to await critical study and nine months later, when reëxamined, its rays were all white. The smaller and more typical *E. philadelphicus* has retained, as usual, the bright pink of its ligules. Again, ho-hum! *E. scaturicola* is, presumably, a physiological variant of *E. philadelphicus*, induced by the concentrated calcium solution and cold water in which it grows. This is the view of Mr. Arthur Cronquist who is studying the genus. Whereas *Aster* is reputed to be hopelessly plastic and inconstant, *Erigeron* is usually well behaved. The "strong waters" along the bluffs of the James have there evidently "gone to the head"s of one member of the relatively conservative genus. It would be instructive to feed ordinary and typical *E. philadelphicus* for some years on refrigerated lime-water.

On the way back to Waverly on the following Monday, as we crossed Cypress Swamp north of Dendron, we stopped to collect typical *Senecio aureus* in the bottomland-woods and as we came back to the car there, at the upper border of the bottomland, we saw a row of plants combining in different degrees the habit and traits of *S. aureus* with those of the very definite and wholly different *S. tomentosus* which was flowering in the drier open areas. It was clear that *S. aureus* and *S. tomentosus* sometimes cross, and Long and I immediately remembered a single colony on a bottomland west of Claremont which we had hopefully identified with *S. Crawfordii*[1]. Was it possible that that, too, was a hybrid? As I shall later show, it is. We thus returned

[1] See RHODORA, xliii. 521 and 657 (1941).

to Waverly at dark, after happy initial days but with some pretty baffling problems in mind and the first evening there we immediately met the greatest problem of all.

When we parked the car outside the café, I promptly went in and sat at a table, but I was soon puzzled because Long and Abbe did not come in. Finally Long appeared at the door and mysteriously beckoned. When I went out, wondering at his action, he met me with the query, "Have you got your credentials? We're pinched." "Why?" I asked. "Because Abbe took a photograph." My credentials (an identification-letter from the President of Harvard University; a letter from the Secretary of the National Academy of Sciences emphasizing that as a member I was a scientific advisor to the federal government; a letter addressed to me as President of the Botanical Society of America; a newspaper-clipping with a picture of me as recipient of a medal, in part for the botanical explorations in Virginia; and a passport with portrait) and my statements regarding the distinguished American forebears of both Long and Abbe promptly convinced the police that we were not, as supposed, German spies who had crossed the Atlantic and had sought out the small village of Waverly for destruction. In the morning when little *Iris verna* was being photographed a zealous Waverly citizen, unacquainted with any such interest as that, had telephoned to State Police headquarters in Richmond of the "furrin" car (from Minnesota) with three "spies" who were photographing the Norfolk and Western railroad-tracks, the Texaco oil-tank and other vital landmarks of the community, for it did not occur to him that our backs were toward the unsightly railroad, with the small oil-tank farther in the background, that the camera was pointed exactly away from those significant objects at something on the ground and that our small botanizing pick (see PLATE 770) was not the implement to use in ripping up the heavy steel rails of the Norfolk and Western. Telephone conversation with the motor-registry in Minneapolis revealed that the car belonged to Professor Abbe, with the incriminating given name Ernst. Radio calls had gone all over southeastern Virginia for all officers to halt our car; and all day long we had innocently driven on the Suffolk turnpike (U. S. Route 460), on the road from near Wakefield to Surry Courthouse (Route 31),

on the Richmond-Smithfield road (Route 10) or on the road from Claremont to Waverly and far beyond, across the state (Route 40). We did not know that we were reputed German spies and that the State Police were watching for us. When we got back to our new home Mrs. Thompson was, naturally, upset. Her husband, the village barber, had come home to noon dinner with the tale, much amplified in the barber-shop, of the terrible mess they had got into, "harboring German spies"; but my documents and the realization that Long and I had for several years known Mrs. Horn, Mrs. Carter and Mrs. Fleetwood, and had more than once been guests at the latters' home, and had regularly stopped in Waverly for meals during several years of botanizing, cleared the atmosphere. Nevertheless, next day some ladies from the other end of the town came to Mrs. Thompson to commiserate. They "hadn't slept a wink, expecting to be murdered in their beds", etc., etc. Thus our début at Waverly was even more horrifying than our appearance on the bottomland of the Pamunkey, and half-jesting, half-serious questions through this trip and on Long's and my June-July trip indicated that the first impression of us "furriners" was still in people's minds. We had become used to being "damn Yankees"; Long and I had once been arrested in Richmond as "German spies" (see RHODORA, xliii. 516); but it was a novel experience to be called "furriners". The people of Waverly are typical Virginians and, consequently, strongly for the "New Deal". They avoided addressing any such obvious heretics as we as "Professor". Baldness having advanced on all of us, we, perhaps, did not fulfill their conception of "long-haired professors". Since I know of no published photograph of *Iris verna* in its native habitat the photograph which so upset the equilibrium of southeastern Virginia and which somewhat "cramped our style" is here presented, as they say in all criminal cases, as exhibit A (PLATE 770).

Desiring to secure in flower the remarkable variations of *Acer floridanum* (Chapm.) Pax near Grove Landing, below Williamsburg, which were discussed and illustrated in RHODORA, xliv. pp. 359, 360, 426–428 and plates 725–727 (1942), and hoping to make the field-acquaintance of *Monotropsis odorata*, one of the Williamsburg specialties, we went on Sunday to William and

Mary as the guests of my former student and Abbe's friend of student days, Professor Albert L. Delisle, and in the afternoon we made a pretty thorough canvas of the *Acer* problem. That has already been reported upon, but when we came to a tree with the trunk more than 4 feet in diameter and with its great sheets of exfoliating whitish bark flapping like those of shagbark-hickory we could not help mourning our inability to get a photograph of it. The herbaceous plants of this rich forest were noted a year ago. To that list should be added *Nothoscordum bivalve* which the day before we had got on the opposite side of the James. After supper Delisle's student, a keen searcher for and discoverer of rare plants, Mr. Kenneth Winfield, took us to his station for *Monotropsis*. It was necessary for him to show us the first clump of slightly too mature plants; after that we found more and more. This aromatic saprophyte really abounded. Its favorite habitat was in the leaf-mold in the shelter of fallen and decaying logs. We thought we had learned how to find it but later searches on similar slopes elsewhere were fruitless.

In April, 1926, Dr. Paul A. Warren collected in the Great Dismal Swamp a dwarf *Trillium* which I had misidentified as the extreme southern *T. lanceolatum* Boykin but which is not satisfactorily referable to that species. Its sessile flowers easily lead to *T. lanceolatum* but in other characters it is near *T. pusillum* Michx., a species with peduncled flowers. Dr. Warren and a party of students from William and Mary had walked in on the old path from Wallaceton to Lake Drummond. The path now being obliterated by dense growth and by tangles of briers following forest-fire, we went in search of the *Trillium* via the Feeder Ditch in Capt. Crockett's motor-boat. The search was futile but the excursion delightful and when we came back from Lake Drummond to the Federal dam, the engineer, Mr. Cherry, asked what particular plant we were seeking. When I described it he promptly said: "I never saw it but once, on a hillside covered with beech-trees where it abounded when I was a boy". His explicit directions took us back to the beech-slope described, near Deep Creek, now a picnic-ground, trampled and scraped and with no *Trillium* left. Most fortunately, however, Mrs. Laura H. Lippitt of Dinwiddie has a good station for the plant and the beautifully prepared specimens she has sent me and others

loaned me by Professor Smart of the University of Richmond enable me to describe and illustrate (PLATE 773, FIGS. 1 and 2) this endemic Virginian *Trillium*.

The season was too early for many novelties, though on succeeding days we extended some local ranges and renewed our acquaintance with numerous vernal species, but nothing significant enough for special note was collected.

Unfortunately, when we could next get away Long and I had to go without Abbe. We reached Waverly in the afternoon of June 28th and, beginning early on the 29th, we had all we could handle until obliged to leave on the morning of July 8th. Mr. Horn was able to supply a pick-up truck to transport our equipment and he found a very efficient driver and helper for us, Lennie Watts, son of a local police-officer, young, full of activity and interest and as effective a driver on back roads as our best drivers of other years. Only three of our old stations were specially revisited. We did not let ourselves be lured to the marl-bluffs of the lower James or north of that river and we did not get down to Greensville County or the pine barrens of southeastern Southampton and southwestern Nansemond. Gasoline was becoming scarce and must be stretched to cover all mileage possible, but we had a careful driver and an efficient truck and Mr. Horn kept it up to full effectiveness.

Nearly west of Waverly we went as far as McKenney in Dinwiddie County. In October of 1941 we had found just east of McKenney an area of low woods and clearings where typical Coastal Plain plants (*Helianthus angustifolius*, *Cirsium virginianum*, and *Solidago perlonga* Fern.) extended well back into the Piedmont and mingled with eastern colonies of upland types such as *Viburnum Rafinesquianum* Schultes. There, too, were the second station north of northwestern Georgia of *Gentiana cherokeensis* (W. P. Lemmon) Fern. and the third station in the state for the characteristic species of prairies of the Interior (Indiana to Texas), *Muhlenbergia brachyphylla* Bush. Such a complex area demands exploration through the summer and autumn and on the 1st of July it was up to its October standard. *Viburnum Rafinesquianum* was more abundant than we remembered; the local *Phlox carolina* L., var. *triflora* (Michx.) Wherry shared a low clearing with *Vicia caroliniana*, *Thalictrum re-*

volutum, *Scleria oligantha* and other rather local species not seen in October. The ditch bordering the woods was the home of *Polygala sanguinea* (rare in southeastern Virginia) and *Rhexia ventricosa* Fern. & Griscom in Rhodora, xxxvii. 192, pl. 346 (1935), its range extended inland, and the *Oenothera* looked, as they so often do, a little strange. A couple of pieces were taken for checking. Next time we will get more, for it is *Oe. tetragona* Roth, var. *riparia* (Nutt.) Munz in Bull. Torr. Bot. Cl. lxiv. 302 (1937), known to Munz only from its original region, Cape Fear River at Wilmington, North Carolina, and the Santee River region of South Carolina. We were hot and hungry. So, seeking a shaded spot, we sat down in a colony of the inland, continental *Psoralea psoralioides* (Walt.) Cory, var. *eglandulosa* (Ell.) F. L. Freeman in Rhodora, xxxix. 426 (1937), Miss Freeman's statement of range being: "Higher altitudes of the Southeastern States, in South Carolina and Georgia, ranging westward as far as Texas, thence northward to Ohio, Indiana, Illinois, Missouri and Kansas". This *Psoralea* and the *Oenothera* were as fine a pair as *Muhlenbergia brachyphylla* and *Gentiana cherokeensis*, found here in October. *Solidago perlonga* we had always considered an autumnal species and it was still in good condition here the preceding October, but already precocious individuals were beginning to flower—the species has a flowering period of four months! *Clematis ochroleuca* was here very large, some plants branching at every axil and bearing 8 fruiting heads. Since the classification of the sub-§ *Integrifoliae* of *Clematis*, § *Viorna* has recently depended too much on inconstant vegetative, rather than more stable fruiting characters, I have tried to find the latter in the eastern American species. My results, with plates 776–782, will be found in Part II.

On the way back to Stony Creek we stopped at several inviting spots. Only one may here be noted. The unique and to most botanists very rare *Carex Collinsii* Nutt. (unique in having the teeth of the perigynium abruptly recurved as hooks, thus suggesting the very primitive subantarctic and Asiatic *Uncinia* which has the exserted rachilla abruptly hooked) inhabits cool spring-fed sphagnous carpets in wooded swamps. Since we first detected it in Virginia we had learned to expect it in such habitats. Consequently, when we saw such a deep carpet of sphag-

num in the woods east of Cherry Hill, we investigated. There was *C. Collinsii*, already over-ripe, and with it was true southern *C. venusta* Dewey at a new northern limit.

Three Creek, tributary to the Nottoway, has yielded us more localized specialties than any other small stream in southeastern Virginia. Wherever we have been on its bottomlands and wooded banks, from the fall-line north of Emporia nearly to its mouth, we have got something novel. The Arringdale Sheet of the Topographic Survey indicated good bottomlands at Arringdale and, slightly farther up stream, near Adams Grove. So, having never tried them, we drove from Capron by the dirt road toward Arringdale. Closely watching the topographic sheet, we sought the crossroad to the village which lends its name to that invaluable guide through the country. Nothing but dense thickets and woods could be found. Turning the car we drove back to definite landmarks. Finally, seeing a colored girl coming toward us we waited and, as she came up, asked: "Will you please tell us how to find Arringdale?" "Irene Dale?" she promptly replied. "I've never hearn of her. I know Irene Dunn up the road a ways but I never hearn of Irene Dale." Arringdale has become extinct; its fame is perpetuated only on the contour-sheet!

It was a sweltering day and the thought of plunging through dense thicket in search of sinuous Three Creek was not inviting; so we went on to Adams Grove. As we crouched in the shade of the small bridge there, to keep out of the blazing heat while we ate our lunch, we were able to note around us several extensions of range to the west, pretty closely approaching the fall-line: *Sagittaria Weatherbiana* Fern. in Rhodora, xxxvii. 387, plates 385 and 386, fig. 1 (1935), *Carex Bayardi* Fern. in Rhodora, xliv. 71 (1942) and *Micranthemum umbrosum* (Walt.) Blake, for example; and as we lunched we were impressed with the somewhat "fluffy" aspect of the meagre umbels of the *Sium* at the margin of the Creek. Its foliage, too, was unlike that of the common northern plant, and its slender and flexuous, terete stems were not like the strongly corrugated and usually coarser stems of the plant commonly known as *S. suave* Walt. or *S. cicutaefolium*. This was young flowering material of the species which we had previously collected in fruit on the bottomlands

of the Blackwater and of Fontaine Creek. They all belong to *S. floridanum* Small, known to Small only from a single valley in Florida. It sometimes pays to stop and eat lunch!

We saved up our allotted gasoline until we had enough to reach the region of Northwest River, flowing from the Great Dismal Swamp into Curratuck Sound. There is always something different to be found on the marshes near Northwest or along adjacent North Landing River; it is important to visit them at all seasons. On the way, a little east of Magnolia, white flowers on the surface of one of the big ditches along the highway across the northern end of the Great Dismal Swamp attracted us, and we got out to collect our first material in the region of *Cabomba caroliniana*. As we approached Northwest we were surprised to see a striking and very "different" *Physostegia* bordering Indian Creek. We were quite familiar, on the wooded bottomlands of the Blackwater and the Nottoway, farther inland, with the delicate and thin-leaved *P. denticulata*, but this was a much coarser plant with larger corollas, heavy and subsessile (instead of membranous and long-petioled) leaves and other characters which quickly distinguish it. Unfortunately, the colony was densely enmeshed by *Cuscuta* but we cleaned off enough material to make a good type and in Part II I shall describe and illustrate it (PLATE 783) and attempt to clarify the genus in the "Manual range". Days at intervals of three weeks in a motor-boat along Indian Creek will sometime be very productive. So will days at similar intervals on little Blackwater River near by and, likewise, on Northwest River, both up stream and down to the Carolina line. Furthermore, North Landing River, with its broad savannah-marshes needs similar exploration. There is plenty to do; we have merely glimpsed the easily accessible margins of these areas. On the reed-marsh of Northwest River the always superb orange- and red-flowered *Asclepias lanceolata*, var. *paupercula* (Michx.) Fern. was very handsome and one plant had bright, pale yellow corollas, a pretty color-form. I took the top, Long wistfully remarking, "We'll come again next year for mine". When we are again able, after the "duration", to visit Northwest there may be more than a single yellow-flowered plant. Here's hoping! And if we are there at the right season we may secure better material of the undescribed

Solidago which, when we found it in October of 1941, had been mowed off and was, therefore, not typical. The thicket bordering the marsh is also the home of a new variety of the wide-ranging and variable *Eupatorium rotundifolium*. Whereas typical *E. rotundifolium* has the leaves gently rounded to subtruncate at base, this plant of Northwest River has the unusually large blades deeply cordate, with the bases clasping the densely white-tomentose stem. We afterward found it in a marshy thicket in Southampton County, and Godfrey got the same extreme variety only a few miles to the south, in Bertie County, North Carolina. It will be described and discussed in Part II. Another plant, a very bristly *Stachys*, on the reed-marsh of Northwest River, added to a large series of different members of the genus accumulated during several seasons in southeastern Virginia, has forced me finally to tackle the group. The results, with many illustrations (PLATES 787–794), will be given in Part II.

July 4th, even with restricted gasoline, may be an unsafe day for cautious and virtuous drivers on trunk-routes. So, when Lennie asked if we might keep off the main roads on that day, to avoid drunken drivers, we remembered that there had been extensive lumbering operations in the pine barrens south of Zuni, with the consequent partial clearing of new lumber-roads and the opening to sunshine of formerly shaded areas. That was the place to go. Clearing and disturbing of the soil, while taking the older trees of Long-leaf Pine and many other trees, had certainly stimulated many species and brought others into view. Near one damp, new woodroad *Amianthium Muscaetoxicum*, at a new northern limit in this section of the state, and *Calopogon pallidus* Chapm., its limit of range extended 10¾ miles to the north, stood up bravely in the mossy thicket where they had formerly been hidden, and some clearing-phases of *Panicum* and *Tephrosia* puzzled us. When the habitat has become more stable the *Panicum* may look less unfamiliar. The *Tephrosia* is the glabrescent extreme of *T. virginiana*, which we had found in other pine barrens. It is evidently *T. virginiana*, var. *glabra* Nuttall, described in 1838 from Georgia. It seems to be a well defined variety. In the drier white sand *Bulbostylis ciliatifolius* (Ell.) Fern. had its northeastern limit also slightly extended.

But the greatest display in the recently disturbed sand was of *Euphorbia Ipecacuanhae*. Under normal conditions this hopelessly variable species flowers in early spring (late March into April) but here in the loosened sand it was still in flower and young fruit in early July. Against the suggested explanation that the similar but more upright *E. marilandica* Greene might be a hybrid of tall and erect *E. corollata*, flowering in Virginia from early June to autumn, and depressed and matted *E. Ipecacuanhae* the reply has always been that they cannot hybridize because their flowering periods are so different. The loosened sands south of Zuni dispose of that argument.

At the Blackwater River, near the bridge west of Blackwater School, we established new northern limits for *Asimina parviflora* (Michx.) Dunal and for *Physalis monticola* Mohr, and, crossing the river into Southampton County, we promptly parked the car, for the sandy flat along the river southeast of Unity was very alluring. Most of the plants were of species now known to us but always nice to collect, *Paronychia riparia* Chapm. and *Vaccinium Elliottii* Chapm. at new northeastern limits and some others equally good. The prize here, however, was a large colony of hundreds of uniform plants of a particularly dainty *Ruellia* which, since June of 1941, had worried us. In low, sandy woods at Round Gut on the Nottoway we had then found a colony of *Ruellia*, the mature stems only 2 or 3 inches high, with thin and blunt membranous leaves only 1.5–3 cm. long. The colony was struggling under a pile of brush and had no real chance. So we carefully cleared away the worst obstructions and nursed the colony along, finally to secure a few flowers. Now we have a real station and the plants from it will be the type when a study of *Ruellia* which I now have in progress is completed. Whether it can be finished in time to include in Part II is very doubtful. It is a complex problem, made worse by past inattention to types and original descriptions, and many contradictory interpretations must be reconciled. But the sandy flat southeast of Unity has one member of the genus which we know from Virginia only in Southampton County.

Starting for home, we decided that we could save mileage and time by cutting over to Route 312, from Courtland to Smithfield,

passing through Berlin[1] thence turning off at Ivor for Waverly. On the way we passed roads leading to various ponds which we should have liked to investigate and when we got north of Sedley a little landlocked pond, slightly off our route was too tempting. It was really a small *Cephalanthus*-hole, but in the thicket we promptly detected the new *Eupatorium* of Northwest River. There, also, was *Drosera rotundifolia*, the first we have seen on the Coastal Plain west of the Blackwater, and on a saturated log the very local *Utricularia virgatula* made a close carpet. Driving on to find a good turning-place we came upon Johnson's Millpond. While Lennie was backing and turning the truck we went to the sandy shore. There was *Oldenlandia Boscii* (DC.) Chapman, its range extended 12 miles northward, but in a couple of days we stretched its northern limit more than 12 miles more; and with it *Digitaria serotina* (Walt.) Michx. at its second known station north of the Carolinas. Here too, was *Panicum Wrightianum* Scribn., a species subsequently found on most sandy pond-shores.

Lennie, noting that we had a weakness for pond-shores and marshes, asked next day if we had ever been to Harold's Millpond. We had not, but since in the past most millponds had been fruitless, as artificially dammed branches, and several which we had sought had been abandoned and grown up to cypress- or gum-swamps, we had our doubts. However, we were willing to try. So on the 6th we started for Harold's (on the contour-sheet as Harris) Millpond, southeast of Waverly. It was a dammed-up cypress- and gum-swamp but it was better than most and will stand exploration by boat, for drifted ashore were *Utricularia purpurea*, which we had never met in our Virginia work, and *U. inflata* var. *minor* Chapm. which we had seen only twice. Thus encouraged we decided to try Brittle's Millpond, west of Wakefield. We stuck to the old road, rather than return to the turnpike, and slightly before reaching Brittle's Millpond we investigated a piece of spring-fed sphagnum-carpeted woods. Here the chief interest was centered on a *Xyris*, just coming into flower and not easily matched in the herbarium. It seems to have some distinctive characters but mature material is needed.

[1] Berlin, Baden and Hanover were none of them named in our honor. They were on Virginia maps long before we visited the state.

Brittle's Millpond at once gave us *Panicum Wrightianum* and *Oldenlandia Boscii*, but the shore was not easy to follow and too much punched by the hoofs of grazing animals, so we proceeded southward to see what could be found. And the next pond was a true find.

Suddenly coming into view, Airfield Millpond gave us a real thrill. It had a broad white-sand beach, perhaps 50 feet wide up to the bushes, such a pond as occurs in southeastern North Carolina but such as we had never seen in Virginia. Here we settled down for the rest of the day, until driven out by a thunder-storm and downpour in the afternoon. The rarer pond-shore species of *Panicum*, such as *P. spretum*, were there, the now unmentionable *Oldenlandia* of course, and carpets of all sizes of *Eleocharis microcarpa*, some stranded, some deeply drowned, and so variable in size and in thinness or inflation of culms that we were fooled into imagining it several things. *Paspalum dissectum* gave us a new station, and *Rhynchospora perplexa* Britton lived up to its name. We kept taking it, for on different belts along the beach it looked very different. Dr. Cross (Shirley Gale) says it is all *R. perplexa*, but she admits that the quite different species which abounds on one stretch of beach, where *Drosera capillaris* Poir. is exceptionally stout and fine, is *R. filifolia*, the first known between southeastern North Carolina and Cape May, New Jersey. We at last had found a pond with real sand-beach. Its shoreline is more than 4 miles around and we followed only one tenth of it. *Rhynchospora filifolia* occurred in but one patch a few rods across, the *Drosera* was more restricted, and we saw only one lonely individual of *Styrax americana*. The remaining shore and visits at intervals up to October should yield great returns. Many species unknown north of the Carolinas delight in such a shore.

On our last day we, inevitably, sought more ponds. Protracted drouth had lowered the water and now was the time to investigate. Driving to Windsor we took a road to Collosse, thence to Darden's Pond. There is a swaley and muddy shore but we got nothing surprising. Next we tried Womble's (on the contour-sheet Wade's) Millpond, which is a drowned cypress-swamp. Sometime, with the aid of a boat, it may yield good things, for *Utricularia inflata* var. *minor* is there; so are great

carpets of *U. biflora*. Our greatest prize, however, was *Carex decomposita*, the rare species heretofore known in the state only in cypress-swamps of the lower James. We then moved on to Whitefield's Millpond, southwest of Corinth, and we regretted that we had not found it in the early morning. This was our last day and twilight was approaching, and we had found another pond with a broad sandy beach. Most of the good things of the other ponds were there and we quickly found a colony of *Hypericum denticulatum* Walt., var. *ovalifolium* (Britt.) Blake, one of the most local plants of the state; then *Viola lanceolata*, var. *vittata* (Greene) Weath. & Grisc. and *Proserpinaca intermedia* Mackenzie, the latter the first from south of the James. At one point I shouted "Look, look!" and promptly got an echo. Long saw it too: a little subprostrate plant with filiform stem, lance-oblong leaves and deep blue glomerules, an *Eryngium* of the *prostratum* group, new to Virginia if not to science. Its immature fruits and its sepals do not well match those of the more southern and western *E. prostratum*. This was the last plant collected and we promised ourselves that in three weeks we should get a real series in ripe fruit. Whitefield's Pond is nearly four miles around. We saw one twentieth of the shore and each of the specialties collected was highly localized. Just as with Airfield and with Johnson's the possibilities are great.

Before leaving Waverly we called on the Chairman of the local Rationing Board and were assured that, when we should return in three weeks, we would be granted the necessary gasoline for continuation of our work, gasoline for trucks used in scientific exploration, as he showed us in the regulations, being unrestricted. It would be necessary, however, to write a letter to the Board who would have to vote on the matter. The letter was promptly sent, with return addressed envelope and an air-mail stamp and I proceeded to make a directory of the more than 100 ponds in Tidewater Virginia, most of which we had never seen. By visiting them all we should find a few as good as Whitefield's, Airfield and the Cat Ponds in northern Isle of Wight. A renewed letter to the local Rationing Board, then one to the State Board, then one from an officer of the federal Experiment Station brought no replies and a considerable collection of uncanceled air-mail stamps was being assembled. Perhaps we

were not merely "damn Yankees". Could it be possible that we were still thought of as "German spies"? In Massachusetts I was assured that, if I would hire and take to Virginia a Massachusetts truck, I could have unlimited gasoline. It seemed, however, an unjustifiable waste of gasoline, as well as tires and time, to travel 1200 miles to and from Waverly in order there to purchase gasoline for 500 miles of local scientific research. We are called disloyal if we do not cheerfully accept all the local and contradictory rulings of OPA. Scientific research is what they choose to dictate and the investigators are those they select. If our work were in Florida or some other state we should not be thus penalized for being scientific investigators.

Professor Massey asked us to guide him to definite stations in Tidewater Virginia for the different species of *Vitis*, *Rubus* and other plants of economic importance and all arrangements were made for our joining forces at Waverly and exploring with his federal truck for the practically useful wild species, including those with edible roots, shoots and seeds and those which might furnish fiber and alcohol. We could also get mature material of the little *Eryngium* and other technically interesting plants. Everything was set for productive field-research when Massey, most unhappily, got himself seriously poisoned and hospitalized by digging and cleaning a lot of bulbs of Fly-poison, *Amianthium Muscaetoxicum*, for experimental study.

In the spring of 1942, Mr. John B. Lewis had sent me from the Seward Forest of the University of Virginia at Triplett in Brunswick County a most extraordinary sterile plant of an *Asarum* which seemed to combine traits of true *Asarum*, with superficial, elongate rhizomes, and § *Heterotropa* (the genus *Hexastylis* Raf.). This was accompanied by an invitation for Long and me to go to the Seward Forest to study it and other problems. Finally, in late August, he sent me from the same area *Hypericum setosum* L., one of the most local of Coastal Plain species in Virginia, and perfectly typical *Cynoctonum sessilifolium* (Walt.) J. F. Gmel., the first evidence in the state of this distinctive species, to quote Small's designation, of "Pinelands and wet places, Coastal Plain, Fla. to La." We already knew that in the Seward Forest there is a small relict stand of Long-leaf Pine, 47 miles west of its concentrated area in south-

eastern Virginia. *Hypericum setosum* and *Cynoctonum sessilifolium*, added to *Pinus palustris*, indicated a probable intrusion of Coastal Plain conditions farther back into the Piedmont of southeastern Brunswick County than the one at McKenney in Dinwiddle County, recorded in RHODORA, xliv. 373 (1942) and on a preceding page in this journal. I promptly wrote Mr. Lewis that, as soon as I could arrange for it, I would go to the Seward Forest. I still hoped (in vain) for at least the courtesy of a reply, pro or con, from the Ration Boards I had repeatedly written, since I knew of so many colleagues with all gasoline needed in various southern states for their scientific explorations.

Finally, on the morning of October 10th, I reached Emporia, to be met there by Mr. Lewis. I had written in advance, suggesting that, before proceeding to Triplett, we drive over to Sedley and have a look at Whitefield's Millpond and collect mature material of the puzzling *Eryngium* and its various companions of October, some of which would certainly be novelties. It seemed, however, that Professor Alfred Akerman, the Director of Seward Forest, wished to see forest-conditions and experimental plantings in Greensville and southern Southampton and had most kindly proposed that we unite errands and spend a long day afield with the Forest truck on the 14th, when I could take a night train, at Emporia, north toward Boston. That plan was so superior to mine that there was no question about it; a few days later we could take the cream from the now abnormally broad sand-beaches of Whitefield's, Airfield and Johnson's Millponds and Long would still more regret that he had been unable to join us.

Seward Forest is a wonderful experimental area for scientific study of forestry and, with very restricted incone, Dr. Akerman and his loyal and underpaid associates are projecting and carrying on invaluable researches. It was a comfort to me to find that this wise and very practical experimenter in forest problems did not have the love of forest fires, as necessary to the stimulation and growth of valuable timber, which is sometimes urged. In fact, the adult trees of Long-leaf Pine, a species which some students claim to need fire if the seedlings are to succeed, have, without that stimulus, successfully planted seeds, and a number of vigorous columns of young trees are there thriving. Most

happily Dr. Akerman did not have the prejudice against botanical research which so frequently blocks our work and, whenever possible, he joined in the local exploration and everywhere found special trees or local tree-species which became the subjects for stimulating discussion. The University of Virginia and the state have invaluable assets in the Seward Forest and in the great capacity and sound common sense of its Director.

Even on the crest, where Long-leaf Pine is successfully renewing itself as a little isolated colony, the rock is mantled by pebbles with rounded sides; and at lower levels the woods and fields are strewn with smoothed and rounded stones and pebbles. This is not what one finds in the ordinary fracturing and frost-heaving of igneous rock. It is most difficult to escape the idea that in this area the old stones and pebbles have been rounded under or by water. The creeks and branches are small and at the lowest levels. In view of the several typical or elsewhere exclusively Coastal Plain species of plants growing there one, who is not a geologist, inclines to the view that an arm of the Miocene Sea must here have intruded back into the Piedmont and that its waters rounded the granitic pebbles and that typical plants, now chiefly of the inner Coastal Plain, subsequently found there the soil-conditions which suit them. At any rate, *Cynoctonum sessilifolium* thrives on a mossy and partially wooded flat; *Hypericum setosum* has recently been found by Mr. Lewis at a second station; *Panicum aciculare of* "Sandy woods and pinelands, Coastal Plain" (*Small*) and *P. lucidum* of "sphagnum bogs, Coastal Plain" (*Small*) abound. In fact, the mingling of Coastal Plain with ordinary Piedmont and even Appalachian Upland plants is very striking. *Panicum aciculare* and the montane *Danthonia compressa* may be collected side-by-side in dry woods. *Kuhnia eupatorioides*, though found in rich woods on the Coastal Plain, is preeminently a plant of the Interior. Near it may be collected the striking *Sorghastrum Elliottii* (Mohr) Nash, here at a new inland limit.

A mile or two up Rattlesnake Creek, west of Triplett, there is a swampy pond-hole in the woods, locally known as the "bog". Here the slightly retarded creek has spread over a flat and, after heavy rain, may become so flooded as to form a considerable pond. One might be in southern Southampton County. The

pool and its margin support several Coastal Plain types, their known ranges here extended 15 to 30 miles inland: *Paspalum fluitans* (Ell.) Kunth (see RHODORA, xxxix. 382, pl. 474, figs. 6–10), *Cyperus densicaespitosus* Mattf. & Kükenth., *Commelina diffusa* Burm. f. (see RHODORA, xlii. 434) and *Hydrolea quadrivalvis*. In dry woods otherwise typical *Andropogon scoparius* has glabrous, instead of densely villous sheaths, and part way up a wooded bluff the northern and upland *Pyrola rotundifolia* var. *americana* has a sterile colony, a plant one would look for in the mountains.

A little mossy swamp-hole, locally known as "Ram-hole" Swamp, because of the ram installed there for pumping water, is largely given over to retarding brambles, but in the mossy thicket there is an abundance of the always beautiful *Lobelia glandulifera* (Gray) Small (see RHODORA, xxxix. 345 and map 20 on p. 343), a species with three geographic centers, (1) from the inner Piedmont of North Carolina across the mountains into Tennessee, (2) several hundred miles to the south, the Coastal Plain of southwestern Georgia and adjacent Florida, and (3) the Coastal Plain of southeastern Virginia and northeastern North Carolina, inland to Amelia and eastern Brunswick Counties. Here it might have been derived either from the southwest or the east; but the goldenrod growing with it may give a clue. Resembling the northern and upland calcicolous *Solidago patula* in having almost wing-angled square stems, it yet is very different. Its technical characters will be defined in Part II. I was delighted to make its acquaintance but somewhat annoyed for, having closed off three different times the treatment of *Solidago*, with 75 species and many cross-references by number for a revised Gray's Manual, I was obliged to interpolate another and to shift the numbering. Nevertheless it is nice to have in Virginia so definite a species as *S. salicina* Ell. It is a fine species of acid bogs of the Coastal Plain and outer Piedmont, described by Stephen Elliott from western Georgia.

One of the finest pieces of hardwood (beech, oak and hickory) in the Seward Forest is back of the old Chamblis place. Here are splendid trees and here Dr. Akerman is carrying on some very productive experiments in forest-reproduction. The soil is deep and, as in all undisturbed beech-oak-hickory forest, full of

interesting upland plants. *Panicum flexile*, a characteristic inland grass, follows the wood-road; and toward the base of one slope there is a bit of the flora of the Blue Ridge or the Alleghenies: *Polygala Senega* var. *latifolia*, *Ligusticum canadense*, and, most surprising of all, the montane *Zizia trifoliata* (Michx.) Fernald in Rhodora, xlii. 298 and pl. 623 (1940), better known as *Z. Bebbii* (Coult. & Rose) Britt.

In an old fallow field back of the Chamblis house there is a large colony, spread evidently by stolons, of a small Leguminous shrub which, Mr. Lewis assured me, never flowers and fruits. It proves to be *Glycyrrhiza lepidota* Nutt., var. *glutinosa* (Nutt.) S. Watson, a rare Licorice from the extreme western side of the United States. It is a large and rapidly increasing remnant of a colony presumably once cultivated. Having, as a boy, chewed licorice-root, I was happy to taste a forgotten nibble, but students now in the university had never even heard of it. One of them returned every few minutes, asking for "a little bit more". I finally had the root firmly glued to the herbarium-sheet!

Hoping for a natural pond-shore, I pushed the inquiry, but the best they could suggest was Simms Millpond, southwest of Fitzhugh, where the dam had gone out some years ago. Proceeding there, we were amazed to see the greatest area of Poke, *Phytolacca americana* (or *decandra*), probably anywhere in existence. The entire drained pond-bottom was a solid, dense thicket of it much higher than our heads. We broke our way into it, hoping for lingering colonies of something more interesting but to no avail. But economically and gastronomically the Poke is interesting and I was surprised to find that it was not being used. The young shoots, as soon as they sprout in early spring, are greatly appreciated as a wholesome and highly nutritious vegetable and are brought regularly to city-markets in many regions, as Charleston, South Carolina, Washington, Baltimore, Philadelphia, etc., as a market-vegetable. The top of the gigantic taproot has a circle of many buds. As soon as the leading shoots are cut others replace them. The leaves alone, from stems up to 3 feet high, are a valuable and delicious potherb, and nothing more tasty, nutritious and quickly cooked could be found than the new stems 2 or 3 feet high, easily rid of the tough rind. *Phytolacca*, only locally appreciated in parts of our country, was

early carried to southern Europe, where it is cultivated for its new shoots. Simms Millpond is locally looked upon as a dead loss. The self-sown crop of tremendously vigorous Poke growing there could feed all Brunswick County for two months in the spring. Tops of the big roots, boxed in earth, frozen, and then placed in a cellar and watered, would supply a green vegetable all winter, and the new shoots from such a God-given truck-farm, sent to an appreciative market, might bring large financial return. The difficulty is to get conservative people to eat what they do not purchase at the corner-market.

Following weeks of unbroken drouth rain came very soon after I reached Seward Forest. It had come to stay and we came in with rain-coats dripping. In the morning of my last day there Dr. Akerman defied the storm and joined Lewis and me on a trip to the Meherrin River, a few miles to the north, above Western Bridge. I specially wanted to see the place because Lewis had collected in flower on the wooded river-bluff the southern *Tiarella* with stout rhizomes, no stolons and very slender racemes. I wanted to secure fruiting material. Trying to dodge the worst downpours, we started up-river in a forest of almost pure growth of *Acer floridanum*, but I very soon worked down to the bottom-land-thicket, for I was attracted by several species there. *Boltonia caroliniana* (Walt.) Fern. in Rhodora, xlii. 487, pl. 642 (1940) was abundant and very tall, though with pink, instead of white ligules, its range extended inland 15 miles or more, and the small-headed *Helenium* was certainly the same as that of the Coastal Plain farther east. We have accumulated so many collections of this *Helenium* from southeastern Virginia that, in desperation, I have tackled the genus. My conclusions will be found in Part II. Vernal and aestival species of this bottom-land were of course unrecognizable, but one leaning and sprawling, very brittle *Muhlenbergia* at once arrested attention. I had just "done" *Muhlenbergia* for the Manual and had attempted to point out more fundamental characters than those commonly used. This one, associated with the common *M. frondosa* (Poir.) Fern. in Rhodora, xlv. 235, pl. 749 and 750 (1943), was none I had seen from the Atlantic slope. Study of its spikelets and comparison in the herbarium shows it to be another prairie species (southwestern Indiana and Illinois to Texas), *M. glabri-*

flora Scribn., isolated, like *M. brachyphylla* (see p. 365) in southeastern Virginia. The lower Meherrin valley begins to compete for honors with the Nottoway. In fact, I now hesitate to make estimates of the relative interest of the isolated or localized floras of the Meherrin, the Nottoway, the Blackwater, and the smaller and sluggish rivers farther east. Each has its specialties. In the aggregate they are a remarkable and still largely unknown flora.

Below the bridge, the steep bluff gave us battered fruit of *Tiarella*. It is so unlike that of the northern *T. cordifolia*, with which it had been placed, as a variety, that in Part II I shall discuss what seem to me its characters and identity. With it were other interesting species and, of course, spring and early summer would yield many more. As notable as any now recognizable were typical *Amsonia Tabernaemontana*, heretofore known in the state only from two stations on the Coastal Plain, and *Scutellaria serrata*, previously unknown in the southern counties east of the Blue Ridge—again the juxtaposition of montane and Coastal Plain specialties.

In the late afternoon, my packing being done, preliminary to a daylight start next morning, I consented to go with Lewis to a little *Cephalanthus*-pool in the woods, which he has dubbed Triplett Pond. Repeatedly, as we drove past it he had gently asked: "Wouldn't you like to look in there?" As regularly, I had declined the invitation. *Cephalanthus*- and *Decodon*-holes rarely yield much, but in this one he had caught small animals which belonged much farther south. I was glad to clear my conscience and to have a look before leaving Seward Forest. On the way, as we passed through dry pine woods, I was surprised to see most characteristic plants of *Gnaphalium obtusifolium* var. *Helleri* (Britt.) Blake, for this very definite variety (see Rhodora, xxxviii. 231, pl. 434, figs. 8 and 9), although originally described from Northwest in southeastern Norfolk County and abundant about Eastville on the Eastern Shore, had never been known inland. Here was an extension inland of 85 miles. The slight inland extension of var. *micradenium* Weath. was negligible and expected. Reaching the little pond-hole, I was amazed to see the coastal *Gratiola virginiana* var. *aestuariorum* Pennell (see Rhodora, xliv. 440, pl. 730, fig. 3). Surely this was no brackish,

tidal shore. But I was diverted by the big clumps of a coarse pilose *Panicum*, which somehow looked familiar but which I could not immediately place; and no wonder, for it is *P. longifolium* var. *pubescens* (Vasey) Fern. in RHODORA, XXXVI. 69 (1934), described by Vasey from Florida and never known north of that state. Lewis knew what he was about when he wanted me to "look in there"; and again I had had rubbed in what we never learn, that in a country with the complex flora of southeastern Virginia every natural spot, no matter how commonplace in aspect, may harbor strongly isolated and local plants.

It was hard to leave the hospitality and stimulating companionship of Dr. and Mrs. Akerman and Mr. and Mrs. Lewis, but next morning in driving rain Akerman, Lewis and I started in the truck for the sand-beaches of ponds in Southampton and Sussex Counties. The forester made his observations and we had a cheerful and interesting trip but, alas, it had rained without letup for five days. When we got to Sedley we were told that we could not get at Whitefield's Pond from the south, for the road was completely under water and the dam itself flooded. That sounded pretty bad and when we reached Whitefield via Corinth, there was the overflowing pond extending back into the woods. The farmer living near by told us that in the forty years he had lived there the water had never been so low as it was until this five-day rain came on. We could have wept. Locating a spot where the little *Eryngium* should be, I walked in to shoulder-depth (I was already drenched by rain), ducked and grabbed. Nothing but floating *Utricularia* and debris came up. The *Eryngium* still evades us. Stopping in Emporia at the home of Lewis's sister and her husband, Dr. and Mrs. George C. Faville (who were sufficiently venerable to have studied botany under the late Professor Charles E. Bessey (1845–1915) in Iowa, but endowed with unlimited alertness and vivacity) and their daughter, Mrs. Wheeldon, I changed to dry clothes and was ready for the all-night ride to New York.

In April Lewis located flowers and young buds on the new *Asarum* and on the 23rd I reached Seward Forest. Restrictions on the use of gasoline had greatly tightened. Lewis had planned to drive to Emporia (18 miles away) for me but the mails had failed to deliver to him my post-card of a week before, saying

when I would arrive. Taxicabs were allowed to cover territory within 10 miles of Emporia and no farther. That distance, fortunately, got me to the Brunswick County line, where I transferred to the taxi of a local farmer who relayed me to Triplett. My home was with one of the foresters and his family, Mr. and Mrs. Howard Nicholson and two delightful little daughters. The fallow fields were carpeted with the vernal weeds and I introduced the family, and especially the children, to the edible qualities, particularly as nibbles and salads, of young Henbit, *Lamium*, and of Peppergrass, *Lepidium virginicum*.

The *Asarum* was locally abundant at the bases of wooded slopes along creeks and branches, great colonies with heart-shaped to slightly halberd-shaped, scattered, solitary firm leaves, but flowers were excessively scarce. In a patch with thousands of leaves there was often not a single bud nor flower; in another patch a few could be found but their peduncles were very fragile and it was difficult to secure a good specimen, showing the thread-like subterranean rhizomes and stolons, without breaking off the flower. Whiteoak Creek and Rattlesnake Creek, investigated at many places, yielded their specimens, and colonies with several young flower-buds were noted, that Lewis might later secure fruit. We here had a very distinct new species and it seemed evident that its rare flowering was a result of its occurrence along creeks and branches where it is often submerged and where its very efficient vegetative reproduction, by slender, subterranean stolons, suffices for its local spread. On the last day, one of the forest-crew having errands in Emporia, we went with him in the truck, in search of this new and very local plant outside Brunswick County. Since both Whiteoak Creek and Rattlesnake Creek are tributary to Fontaine ("Fountain") Creek, the obvious place to look was farther down the latter valley. At our first stop, at the bridge over Fontaine Creek near Barley in southwestern Greensville County, Lewis promptly walked into it; but that seems to be about its eastern limit, not far from the entrance of Rattlesnake into Fontaine Creek. Other crossings of Fontaine Creek did not yield it, although the stretch from the mouth of Rattlesnake Creek to Round Hill Church could not be examined. At Round Hill Church the banks would be forbidding to it, acid sand with *Kalmia latifolia* forming a dense thicket and,

where the white sand is loose and dry, supporting the most beautiful and extensive colony of *Phlox nivalis* I have ever seen. In RHODORA, xlii. 476 (1940) I took up for this plant the unequivocal name, *P. Hentzii* Nutt. (1834) because in the place where he started the name *P. nivalis* Loddiges had given no adequate diagnosis. Subsequently, however, Dr. Wherry, in RHODORA, xliii. 71 (1941), showed that the name given by Loddiges was validated by Sweet in 1827, when a proper diagnosis and fuller description were published. *P. nivalis*, then, has right of way.

The woods along Fontaine Creek lower down, in an area southwest of Dahlia, seemed so like those along Whiteoak and Rattlesnake Creeks that we hopefully went there. As Lewis agreed, it is just the right habitat but no *Asarum* could be found. Subsequently, by saving up his gasoline, Lewis trailed the new species to a small creek in Brunswick County which empties into Roanoke River. How extensively it occurs along Roanoke drainage can be determined only when more gasoline is available. At any rate, this remarkable new species will be described and illustrated (PLATES 774 and 775) in Part II.

Just below Emporia the Meherrin is bordered by a forest composed largely of a yellow-flowered Buckeye. In 1936 Long, Griscom and I had got a little of it in woods along Metcalf Branch, which enters the Meherrin a mile farther down; and in RHODORA, xxxix. 352 and 435 (1937) and xl. 441 (1938) I erroneously recorded it as *Aesculus discolor* Pursh, a more western species. The freshly flowering material secured from the extensive forest of the tree shows it to be *Ae. neglectus* Lindl., var. *pubescens* Sargent. It was a novel experience to wander in such a forest on the inner edge of the Coastal Plain. Whereas at Triplett, only 18 miles to the west and with creeks at barely 100 feet greater elevation, spring was just emerging, here it was almost summer. *Corydalis flavula*, which we had known on the Coastal Plain of southeastern Virginia only along the James and its tributaries was scattering seed; the fruits of *Nemophila microcalyx* and of *Viola striata* (also James River specialties) were ripe. Great carpets of *Phacelia dubia* had enough lingering flowers to be handsome and, surprise of surprises, here were thousands of plants, now passing out of bloom, of upland and inland *Trillium*

sessile, the first member of its genus I had ever seen growing in southeastern Virginia. There was no time to linger. These and a few other species were tucked into a portfolio and I hurried to catch the night train northward, hoping that some "break" would soon get Long and me to this botanically unexplored and most distinctive area of the Meherrin at the inner margin of the Coastal Plain. At least, I could get another and longer visit there when, a few weeks later, I should return to Seward Forest to follow up *Rubus*, which there seems to be a series somewhat different from that of the Coastal Plain. When I regretfully said good-by to Lewis and with forty people boarded the north-bound train at Emporia, the now familiar announcement of the Conductor reached my ears, "No seats. Standing room only." On the platform of the car, however, there were two square feet of space, where someone had moved. Setting my suitcase on end and placing the portfolio of fresh specimens across it, I had a seat, such as it was, all the way to Washington, where the train decided to make over before proceeding to New York. Three hours wait in a milling throng outside the train-gate from 1 to 4 A. M. was finally relieved by announcement of a train to New York. Such, inevitably, is travel in war-time. There has been no opportunity for another trip, gasoline-rationing having still further tightened; but, in spite of varied and discouraging obstacles, something has been done to keep the flame of botanical exploration burning. The results, more briefly summarized in Part II, are not discreditable. Beginning the Virginia work with three days in the field in 1933, continuing with two to five trips a season for nine years and making but one brief trip, as a guest of the Seward Forest, in April of 1943, we are assembling much substantial data on the flora of the state. In the last report on this work[1] the records of vascular plants new to Virginia, recorded in this series of papers, reached 751. When and if we are again able to renew the exploration the score of novelties to the state can begin the ninth century.

[1] *The Seventh Century of Additions to the Flora of Virginia*, Rhodora, xliv. 341–405, 416–452, 457–478 and plates 717–744—Contrib. Gray Herb. no. CXLV (1942).

Part II. Range-extensions, Technical Notes and Revisions

In Part II, as in previous papers of this series, the notes covering extensions of range are assembled, even though the species has been discussed in the more discursive journal. Several species collected by others and detected in the Gray Herbarium during studies recently prosecuted, or some sent by others, are included if I can find no record of their occurrence in the state. A number of detailed and critical studies are also included since they have grown out of comparisons of our Virginia material or since they deal with genera occurring in the state. The many plates were prepared by Dr. Bernice G. Schubert, to whose skill and patience I am under great obligation. The cost of engraver's blocks has been covered from a grant for personal research from the Department of Biology of Harvard University. As so frequently in the past, Mr. Long has most generously aided in meeting the expense of publication.

As heretofore, plants thought to be previously unlisted from Virginia or only recently recorded in technical studies of groups are indicated by an asterisk (*). In the enumerations the names of the collectors, when Fernald & Long, are generally omitted.

*Potamogeton epihydrus Raf., var. Nuttallii (Cham. & Schlecht.) Fern. × P. pulcher Tuckerm. Isle of Wight County: forming an extensive carpet, outlet of Lee's Millpond, no. 12,230. See Ogden in Rhodora, xlv. 184 (1943). The only known occurrence of this hybrid. See also Rhodora, xliii. 508 and 519 (1941).

*Danthonia spicata (L.) Beauv., var. longipila Scribn. & Merr. See Fernald in Rhodora, xlv. 244 (1943), where several Virginia collections are cited.

D. compressa Aust. See Fernald, l. c. A northern and upland species occurring only locally in the southeastern counties: Surry County: rich calcareous wooded slopes along James River, Claremont Wharf, no. 9825. Brunswick County: oak-hickory-beech woods back of old Chamblis Place, Seward Forest, near Triplett, *Fernald & Lewis*, no. 14,458. See p. 376.

*Muhlenbergia glabriflora Scribn. Brunswick County: exsiccated bottomland woods above Western Bridge, Meherrin River, south of Edgerton, *Fernald & Lewis*, no. 14,460. The first station known from east of the Mississippi Basin (southwestern Indiana and Illinois to eastern Texas). See p. 379.

Digitaria serotina (Walt.) Michx. To the single recorded

Virginia station add another, also in Southampton County: sandy shore of Johnson's Millpond, 1½ miles north of Sedley, no. 14,265. See p. 371.

Paspalum dissectum L. To the few recorded stations add one in Sussex County: sandy shore, Airfield Millpond, southwest of Wakefield, no. 14,264. See p. 372.

P. fluitans (Ell.) Kunth. See Rhodora, xxxix. 282, t. 474, figs. 6–13 (1937). Local range extended into Brunswick County: swampy pond-hole in woods, Rattlesnake Creek, west of Triplett, *Fernald & Lewis*, no. 14,462. See p. 377.

Panicum flexile (Gattinger) Scribn. Brunswick County: clearing in oak-hickory-beech woods back of old Chamblis Place, Seward Forest, near Triplett, *Fernald & Lewis*, no. 14,471. Cited by Hitchcock & Chase only from Alexandria County. See p. 378.

*P. longifolium Torr., var. pubescens (Vasey) Fernald in Rhodora xxxvi. 69 (1934). Brunswick County: sphagnous knolls in woods by Triplett Pond, Seward Forest, near Triplett, *Fernald & Lewis*, no. 14,472. First from north of Florida. See p. 381.

P. aciculare Desv. Local range extended inland to Brunswick County: dry border of oak-hickory-beech woods back of Chamblis Place, Seward Forest, near Triplett, *Fernald & Lewis*, no. 14,466. See p. 376.

P. Wrightianum Scribn. Several additional stations on pond shores. Sussex County: Brittle's Millpond, west of Wakefield, no. 14,267; Airfield Millpond, southwest of Wakefield, no. 14,268. Southampton County: Johnson's Millpond, 1½ miles north of Sedley, no. 14,266; Whitefield's Millpond, southwest of Corinth, no. 14,270. Isle of Wight County: Darden's Pond, southeast of Collosse, no. 14,269. See pp. 371 and 372.

P. auburne Ashe. To the few recorded stations add one in Isle of Wight County: dry sandy pine barrens, south of Zuni, no. 14,275.

P. sphaerocarpon Ell., var. inflatum (Scribn. & Sm.) Hitchcock. In disturbed soil in wet woods along Assamoosick Swamp, northeast of Homeville, Sussex County, the stimulated plants reach a height of 1 m. with leaves up to 1.6 dm. long and 1.5 cm. broad, the panicles 1.5 dm. long and 1 dm. broad. The extreme height given by Hitchcock & Chase for the species is 5.5 dm., with panicles up to 1 dm. long.

*P. tenue Muhl. Westmoreland County: open, sandy pine woods, Colonial Beach, *F. T. Hubbard*, no. 413, as *P. ensifolium*. Not recorded from north of North Carolina.

P. mundum Fernald in Rhodora, xxxviii. 392, t. 443, figs. 1–5 (1936). To the few recorded stations add one in Norfolk County: sphagnous pocket, upper border of fresh reed-marsh and swale along Northwest River near Northwest, no. 14,272.

*Setaria verticillata (L.) Beauv. Rockbridge County: along sidewalk, Lexington, August 23, 1924, *J. R. Churchill*.—Not indicated for Virginia on Hitchcock's map 1567 (*Man.*).

The common northern Burgrass.—The common Burgrass of open sands, from New Hampshire to Oregon, south to North Carolina, Kentucky, Missouri, Kansas and New Mexico, is indigenous or spread from indigenous colonies through much of this range but, singularly enough, it has always passed under specific names which technically belong to other species. Long identified as *Cenchrus echinatus* L., it was forced to resign that name to the quite different tropical species. Similarly the name *C. tribuloides* L. soon proved to belong to the very coarse tropical and southern coastal species. Then *C. carolinianus* Walt. was despairingly grasped, but Walter's type is unknown, our plant is doubtfully in his territory, and Mrs. Chase, Contrib. U. S. Nat. Herb. xxii. 76 (1920), believes that *C. carolinianus* might have been *C. incertus* M. A. Curtis, which does grow in Walter's country. In her monograph of the genus she merges our plant with the Mexican *C. pauciflorus* Benth. and, until Dr. I. M. Johnston, working upon his Mexican and southern Texan material, segregated it off from the great bulk of specimens from the northern and Rocky Mountain region of the United States, it so rested. Dr. Johnston, not wishing to get involved with the more northern and northeastern plant, called the matter to my attention. There is no doubt that *C. pauciflorus* is the Mexican (and Texan) species, Bentham having described it from Lower California: "culmis suberectis, . . . Folia plerumque angustiora [quam in *C. echinata*], spinis dorsalibus marginalibusque validis basi dilatatis".

Cenchrus pauciflorus, then, is the Mexican and Texan species with culms usually in erect or ascending tufts, the leaves 1.5–4 mm. broad, the summit of the sheath spreading as a chartaceous flange; spikes 1–5 cm. long, 1–1.5 cm. thick; the stramineous involucres 8–12 mm. broad (from tip to tip of mature spines), the dorsal and lateral spines compressed and broad-based. The characteristic fruit, from the type of *C. pauciflorus*, is shown by Mrs. Chase, l. c. fig. 17, p. 68.

Our plant, on the other hand, has more generally decumbent or rooting culms, up to 8 dm. long and strongly geniculate;

leaves 3–8 mm. broad, the enlarged sheaths constricted at summit; spike 1.5–8 cm. long and 1.3–2 cm. thick, the mature stramineous to bronze or purplish burs 1–1.5 cm. in diameter, with the coarse spines subulate-subterete. The bur is beautifully shown, as that of *C. pauciflorus*, in Chase, l. c. 69, fig. 18, and this figure, instead of that of true *C. pauciflorus*, was copied in Hitchcock, Man. fig. 1594. As compared with that of real *C. pauciflorus* it is too large, with more numerous spines, the stronger ones more slender and without deltoid and flattened bases.

So far as I can find the only available name for the northern and transcontinental species is *C. echinatus*, forma *longispinus* Hackel, based upon Connecticut material collected by Harger and distributed by Kneucker (no. 426). As a diagnosis of a form of *C. echinatus*, in the loose sense, Hackel's brief description was sufficient. Treated as a species the plant demands a fuller account. It is fortunate that Hackel has supplied the basonym and type. Even so, I take no comfort in having even my name intimately associated with a *Cenchrus* and the keen taxonomist who called it to my attention would not care to have the species named for him!

Cenchrus **longispinus** (Hackel), stat. nov. *C. echinatus*, forma *longispinus* Hackel in Kneucker, Allg. Bot. Zeitschr. ix. 169 (1903). Planta annua; culmis decumbentibus vel adscendentibus ad 8 dm. longis geniculatis basi ramosis; foliis 3–8 mm. latis, vaginis distentis apice constrictis; spicis maturis 1.5–8 cm. longis 1.3–2 cm. crassis; involucris maturis stramineis vel aeneis vel purpurascentibus hirsutis 1–1.5 cm. diametro, spinulis majoribus tereti-subulatis. Type of *C. echinatus*, forma *longispinus:* Oxford, Connecticut, *E. B. Harger* in Kneucker, Gram. Exsicc. Lief. XV. no. 426.

In southeastern Virginia, fortunately, *Cenchrus longispinus* is rare. Our only collections are the following. James City County: sandy field about 5 miles west of Toano, *R. W. Menzel*, no. 187. Southampton County: dry white sand of clearing in oak and pine woods bordering Assamoosick Swamp, south of Sebrell, no. 10,941; grassy roadside about 7 miles south of Franklin, no. 7297 (misidentified as *C. incertus*).

Erianthus coarctatus Fernald in Rhodora, xlv. 246, t. 758 (1943). Note that the plant of Sussex County previously reported as *E. brevibarbis* Michx. belongs here. *E. brevibarbis* is a very different plant of the Mississippi Basin.

*EULALIA VIMINEA (Trin.) Ktze., var. VARIABILIS Ktze. *Pollinia imberbis* Nees, var. *genuina* Hackel, Andropogoneae in DC. Mon. vi. 178 (1889). GREENSVILLE COUNTY: roadside bordering rich woods by Three Creek, northwest of Emporia, nos. 12,564 and 13,883.

When, in RHODORA, xliii. 518 and 536, I reported *Eulalia viminea* (no. 12,564) from Greensville County we had not yet got the flowers. The later collection (no. 13,883), made October 13, 1941, shows the plant to be var. *variabilis*, which is characterized by having delicate awns up to 9 mm. long. Blake's plant, collected along the James River at City Point, near Hopewell in October, 1931 (*Blake*, no. 11,472) is of typical *E. viminea* (i. e. *Pollinia imberbis*, var. *Willdenowiana* (Nees) Hackel), with awnless spikelets. Typical *E. viminea* occurs southward to Alabama: shaded bank of Tennessee River, northeast of Sheffield, Colbert Co., Oct. 7, 1934, *Harper*, no. 3275.

The earliest valid generic name for the genus is *Eulalia* Kunth, Rév. Gram. i. 160, t. 93 (1829), although Hackel, like most Old World botanists, has maintained *Pollinia* Trin. in Mém. Acad. Pétersb. ser. VI. ii. 304 (1833). In so doing they may have been misled by Index Kewensis, which lists just before *Pollinia* Trin. another *Pollinia* Spreng. Pugill. ii. 10 (1815), "farrago [mixture] = seq. &c." The "&c" is correct, for Sprengel had 10 species, none of them considered by Hackel as belonging in *Pollinia* Trin.: 6 referred by Hackel directly to *Andropogon;* 1 to *Oplismenus;* 1 to *Ischaemum;* and 2 wholly doubtful "species inextricabiles" (Hackel, l. c. 565). *Pollinia* Trin. (1833), clearly antedated by *Eulalia* Kunth (1829), must lapse.

In looking up the origin of the generic name *Eulalia* the quickest method was to turn to the shelf of dictionaries and to see what Wittstein said in his Etymologisch-botanisches Handwörterbuch. There it is: "**Eulālia** KNTH. (*Gramineae*). Zus. aus εύ (schön, gut) und λαλια (Rede, Gericht, Ruf); ein schönes, guldgelbblühendes Gras". The type of the genus being *E. aurea* Kunth, that derivation is plausible. Had Wittstein taken the trouble to look up Kunth's own explanation, however, he would have found a more pleasing and splendidly appropriate explanation of the name, for it is difficult to imagine more beautiful illustrations (all signed E. D.) than the 220 wonderful plates

by Eulalia Delile which clarify Kunth's remarkable volumes. That Kunth was fully appreciative of his artist is made clear by his own explanation: "Dixi hoc genus in honorem Eulaliae Delile, cujus perito elegantique penicillo icones hujus operis ut et quorumdam aliorum debet botanice".

*Andropogon scoparius Michx., var. genuinus Fern. & Grisc. in Rhodora, xxxvii. 143, 144 (1935), forma **calvescens,** f. nov., vaginis glabris. Virginia: dry woods along Rattlesnake Creek, west of Triplett, Brunswick County, October 11, 1942, *Fernald & Lewis*, no. 14,474 (type in Herb. Gray.; isotype in Herb. Phil. Acad.); moist sandy and peaty pine barrens, south of Lee's Mill, Isle of Wight County, August 23 and September 2, 1940, *Fernald & Long*, no. 12,567. See p. 377.—Quite like typical *Andropogon scoparius* (= var. *villosissimus* Kearney) but with the sheaths glabrous instead of densely villous.

Sorghastrum Elliottii (Mohr) Nash. Local range extended inland to Brunswick County: dry woods along Rattlesnake Creek, west of Triplett, *Fernald & Lewis*, no. 14,473. See p. 376.

Bulbostylis ciliatifolius (Ell.) Fern. New northeastern extensions. Isle of Wight County: dry sandy pine barrens south of Zuni, no. 14,283. Southampton County: dry sand of open alluvial flat by Blackwater River, southeast of Unity, no. 14,284. See p. 369.

*Scirpus subterminalis Torr. Princess Anne County: shallow water, northwest branch of Salt Pond, June 28, 1922, *L. F. & Fannie R. Randolph.*

Although Britton, Ill. Fl., cites *Scirpus subterminalis* as extending south to South Carolina and Small, Man. 169, says "Miss.", I have been unable to locate previous material from south of New Jersey and Pennsylvania. There is nothing in the Gray Herbarium nor in the Britton Herbarium from south of New Jersey and Pennsylvania, except the Salt Pond specimen; and the rather extensive collecting in eastern South Carolina and eastern North Carolina by Godfrey did not bring it to light. Beetle, however, in Am. Journ. Bot. xxx. 396 (1943) seems to have seen material from both South Carolina and Mississippi.

The Specific Characters of Scirpus Olneyi—One of the most distinctive species of *Scirpus*, § *Schoenoplectus*, is the coarse, soft-stemmed *S. Olneyi* Gray (1845), which follows saline and brackish marshes from eastern South America up the Atlantic to southern New Hampshire and Nova Scotia, the Pacific to Washington. In many characters the plant is so

distinctive that amateurs who do not distinguish between some technical species usually recognize this one at a glance. It is, therefore, a bit startling to find in the Am. Journ. Bot. xxx. 397 (1943) Beetle merging it with and reducing it to *S. chilensis* Nees & Meyen (1843). Beetle's detailed description of the inclusive species, as *S. chilensis*, clearly says "style 2-fid", which is correct for the tropical and North American *S. Olneyi*, and in his discussion he speaks of the original diagnosis of *S. chilensis* as "adequate to identify the plant". He then quotes the diagnosis of *S. chilensis*, including the original and easily corroborated "stylo trifido"; but he gives no explanation of how a plant of the warmer half of the Northern Hemisphere with "style 2-fid" is necessarily, or even probably, identical with a plant of temperate South America with "stylo trifido". This distinction is constant, apparently. So are several others. The broadly wing-angled soft culm of *S. Olneyi* is so very soft that in pressing it becomes flat and ribbonlike; in fresh condition, however, it has deep reëntrant angles which caused Asa Gray, in originally describing it, to give the following vivid description: "distinguished by its remarkably 3-winged stem. The reëntering angles are so deep that the cross section presents the appearance of three rays, or plates with parallel sides, joined by a common center." The collapsing of the culm under very slight pressure results from its hollow or fistulous character, the pith occurring as scattered remnants only. If *S. Olneyi* is identical with *S. chilensis* it is notable that the much more slender culms of the latter are firm and resistant, not flattened in drying, that they lack the extremely broad wing-angles and deep reëntrant concavities and that they are closely filled with pith.

In *S. Olneyi* the upper leaf-sheaths have a U- or V-shaped orifice and the brown tissue of the sheath-summit is readily friable; in *S. chilensis* the orifice is subtruncate or very shallowly concave and the tissue firmer. In *S. chilensis* the excurrent midribs of the scales project more prominently than in *S. Olneyi*. In *S. chilensis*, as already noted, there are 3 style-branches, in *S. Olneyi* 2. Although the achenes of the bipartite *S. chilensis* sensu Beetle are given absolute dimensions, "2.5 mm. long, 1.5 mm. broad", the few achenes of *S. chilensis* available, from *Pennell*, no. 12,923 and *Osten*, no. 22,029, are definitely more

slender than in *S. Olneyi*. These two numbers of *S. chilensis* have achenes narrowly obovate and three fifths to three fourths as broad as long: 2.6 × 1.8 mm., 2.4 × 1.8 mm., 2.3 × 1.5 mm. On the other hand, ripe fruit from material of *S. Olneyi* from the general type-region, southern New Hampshire to Virginia, shows much more rounded or broadly obovate achenes four fifths as broad to essentially as broad as long: 2.2 × 1.8 mm., 2.2 × 2 mm.; 2.4 × 2.2 mm., 2 × 1.8 mm., 2 × 1.6 mm., etc. Whether or not typical *S. Olneyi* occurs in temperate South America I am not situated to determine. Barros & Osten described a *S. Olneyi*, forma *australis* from Uruguay in Anal. Mus. Hist. Nat. Montevid. ser. 2, iii. 204 (1931) and in vol. xxxviii. 159 and 161 (1935) Barros illustrated it and cited much material from Argentina but did not suggest that it includes *S. chilensis*. In fact, in the latter detailed study Barros definitely cited (p. 156) *S. chilensis* as identical with *S. americanus* Pers. I am content to keep up *Scirpus Olneyi* as a thoroughly distinct species.

In Virginia *Scirpus Olneyi* makes extensive colonies often 2 m. or more high, on the saline and brackish shores.

*S. VALIDUS Vahl, var. CREBER Fern., forma MEGASTACHYUS Fernald in RHODORA, xlv. 283, t. 765, fig. 8 (1943). JAMES CITY COUNTY: marsh of Chickahominy River about 5 miles west of Toano, *R. W. Menzel*, no. 89.

*S. ETUBERCULATUS (Steud.) Ktze. PRINCESS ANNE COUNTY: shallow water, northwest branch of Salt Pond, June 29, 1922, *L. F. & Fannie R. Randolph*, no. 462.

Scirpus etuberculatus, one of the most localized of species, has a long-known station near Salisbury, Maryland, one or two in southeastern North Carolina, two in Georgia, one in Florida, two in Alabama, one in Mississippi, and one in Louisiana. The station of Mr. and Mrs. Randolph is apparently the first between southeastern North Carolina and Salisbury, Maryland.

*S. ROBUSTUS Pursh, forma **protrusus,** f. nov., spiculis plus minusve elongatis ad 3–5 cm. longis.—VIRGINIA: brackish to fresh marsh along Back Bay, at eastern margin of Long Island, Princess Anne County, August 25, 1939, *Fernald & Long*, no. 10,973 (TYPE in Herb. Gray., isotype in Herb. Phil. Acad.); border of salt marsh, Ragged Island, northeast of Carrollton, Isle of Wight County, August 20, 1940, *Fernald & Long*, no. 12,587.—Differing from typical *S. robustus* (with spikelets 1.3–3 cm. long) by its very prolonged spikelets.

Photo. B. G. Schubert.

LILIUM CANADENSE: FIGS. 1 and 2, × 1; Var. EDITORUM: FIGS. 3–5, × 1

Photo. B. G. Schubert.

TRILLIUM PUSILLUM, × 1: FIG. 1, Michaux's TYPE, after photo. by *Cintract;* FIGS. 2 and 3, modern specimens from type-region, FIG. 2 with short anthers, FIG. 3 with long anthers

S. MARITIMUS L., var. FERNALDI (Britton) Beetle. See Fern. in RHODORA, xlv. 289 (1943). *S. novae-angliae* Britton. Our only collections are from the James River or its tributary creeks. SURRY COUNTY: tidal marsh at mouth of Crouch Creek, east of Scotland, no. 8593, previously reported as *S. novae-angliae*. JAMES CITY COUNTY: tidal shore of Back River, opposite James-town Island, no. 10,972, distrib. as *S. robustus* Pursh.

*S. MARITIMUS, var. FERNALDI, forma AGONUS Fern. l. c. 288 (1943). NEW KENT COUNTY: fresh tidal marsh by Lacey Creek, west of Walker, no. 13,559.

*RHYNCHOSPORA FILIFOLIA Gray. SUSSEX COUNTY: upper border of siliceous and argillaceous shore, Airfield Millpond, southwest of Wakefield, no. 14,301. First station between southeastern North Carolina and Cape May, New Jersey. See p. 372.

CAREX DECOMPOSITA Muhl. To the three recorded stations add one in SOUTHAMPTON COUNTY: margin of cypress swamp bordering Womble's (or Wade's) Millpond, north of Baffle, no. 14,305. See p. 373.

C. BAYARDI Fern. *C. virginiana* Fern., not Woods. Range extended northwestward in SOUTHAMPTON COUNTY: sandy alluvial bottomlands of Three Creek, Adams Grove, no. 14,306. See p. 367.

C. VENUSTA Dewey. To the few recorded stations add one in DINWIDDIE COUNTY: wet springy sphagnous woods east of Cherry Hill, no. 14,307. See p. 367.

C. COLLINSII Nutt. To the few recorded stations add one in DINWIDDIE COUNTY: wet springy sphagnous woods east of Cherry Hill, no. 14,311. See p. 366.

COMMELINA DIFFUSA Burm. f. Local range extended inland to BRUNSWICK COUNTY: swampy pond-hole in woods, Rattlesnake Creek, west of Triplett, *Fernald & Lewis*, no. 14, 478. See p. 377.

AMIANTHIUM MUSCAETOXICUM (Walt.) Gray. Local range extended northward in ISLE OF WIGHT COUNTY: clearing in damp sandy pine barrens south of Zuni, no. 14,315. See p. 369.

NOTHOSCORDUM BIVALVE (L.) Britt. Range extended inland from Princess Anne and Northampton Counties: JAMES CITY COUNTY: turf back of beach and disturbed soil in woods and thickets back of sand-beach of James River, Martin's Beach, southeast of Grove, *Fernald, Long & Abbe*, nos. 14,128 and 14,129. ISLE OF WIGHT COUNTY: turf back of sand-beach of Burwell's Bay, James River, below Rushmere (Fergusson's Wharf), *Fernald, Long & Abbe*, no. 14,127. See pp. 360, 364.

*LILIUM CANADENSE L., var. **editorum,**[1] var. nov. (TAB. 771, FIG. 3–5), a var. typico recedit foliis mediis ellipticis vel oblongis acutis vel subacutis, vix attenuatis, latitudine ⅕–½ partem

[1] ***Editorum*** **(of the uplands) from** ***editum*****, upland or a height; not from** ***editor!***

longitudinis aequante; floribus rufescentibus; perianthii tubo elongato, tepalis supra medium sensim arcuatis; petalis (siccis) 0.8–1.3 cm. latis.—Locally from the mountains and the Allegheny Plateau of Pennsylvania to Kentucky and the mountains of Alabama. PENNSYLVANIA: Waddle, Center County, July 3, 1939, *J. P. Kelly;* thickets along Conoquenessing Creek, Butler County, July 17, 1932, *John Bright*, no. 6789. OHIO: Columbus, 1837, *Lesquereux?* WEST VIRGINIA: swale near Cacapon River, Hampshire County, July 1, 1933, *Hunnewell*, no. 12,771. VIRGINIA: open mountain-meadow at about 4000 feet alt., top of Butt Mountain and at about 3500 feet alt. near Little Stony Creek near "Cascade Road", Giles County, July 24, 1943, *A. B. Massey*, no. 4617 (TYPE in Herb. Gray.); meadow, Virginia Hot Springs, Bath County, July 5, 1917, *Hunnewell*, no. 4824; woods at 2700 feet alt., Shenandoah Mt., Rockingham County, July 14, 1932, *Hunnewell*, no. 12,481. KENTUCKY: swampy meadows, 2 miles south of London, Laurel County, July 4, 1939, *McFarland*, no. 3545; oak-chestnut mountain-summit forest, at 4000 feet alt., Black Mt., Harlan County, July 22, 1937, *E. Lucy Braun*, distrib. as *L. canadense* or *L. michiganense*. ALABAMA: rich woods on limestone, north slope of Monte Saho, Madison County, June 22, 1932, *T. S. Van Aller*.

Freshly collected material of *Lilium canadense* var. *editorum* reached me just as this Contribution was starting to the printer, Professor Massey sending it with a query as to its real identity. Typical northern *Lilium canadense*, described from Canada and occurring from the Gaspé Peninsula of Quebec to northeastern Ohio, south to Nova Scotia, New England, Pennsylvania and upland to western Virginia, has the lanceolate (narrowly to broadly) leaves of the median whorls attenuate to acute tips, the blades $\frac{1}{10}$–$\frac{1}{5}$ as broad as long, the usually yellow flower (red only in the rare forma *rubrum* Britt.) with relatively short and thick tube, the tepals strongly arching (FIG. 1) from below or near the middle, the petals 1.2–2 cm. broad. Occasional specimens have the leaves of var. *editorum* but the flower of typical *L. canadense*. Such a transitional series is represented by *MacDaniels & Thomas*, no. 3710 from Ithaca, New York. It is noteworthy, then, that Ithaca is near the northern border of the Allegheny Plateau as mapped by Fenneman.

The chief points of departure of var. *editorum* are its relatively broad and only slightly if at all tapering leaves, its red flower with slender and elongate tube, so that the arching of the tepals

starts near or above the middle, and the narrow tepals, the petals in dried specimens being only 0.8–1.3 cm. broad. One collection before me, *C. E. Wood, Jr.*, no. 1365, from sedge-meadow, Little Meadows, northwest of Mountain Lake, Giles County, Virginia, has the leaves narrower than and as attenuate as in the most extreme northern plant, with flowers nearly of var. *editorum*.

A number of the above cited specimens were sent to the Gray Herbarium with indications of doubt as to the identity and usually with note of the red flower. The *Bright* material from Butler County was marked in the hand of a temporary assistant "*Lilium michiganense*", while the *McFarland* specimen was identified with doubt as *L. canadense*, and the old sheet from Columbus, Ohio, originally identified as *L. canadense*, bears modern annotations, first as *L. superbum* L., later as *L. michiganense* Farw. Until Professor Massey sent his material the question of an undescribed montane variety had not been considered. The accumulated discontent with the identification of the plant lead to its more critical study.

When we know ripe fruit of *Lilium canadense*, var. *editorum* the seeds may show some further differences. The ripe fruit of typical northern *L. canadense* is well represented in the collections before me, by 19 numbers in fully mature fruit, collected in eastern Canada and interior New England, north or inland from the coastwise northern limit of *L. superbum* and far east of the quite different inland *L. michiganense* Farw. The fully developed seeds of *L. canadense* vary from 7–11 mm. long, mostly 9–10 mm. It is hoped that mature fruit of the montane plant may soon be available.

The frequent misidentification of *Lilium canadense*, var. *editorum* as the eastern and southern *L. superbum* or as the midland *L. michiganense* reflects dissatisfaction with its being called simply the northeastern *L. canadense* but it also indicates lack of understanding of the morphological characters which separate *L. michiganense* and *L. superbum* from one another and both of them from *L. canadense*.

In PLATE 771, FIG. 1 is typical LILIUM CANADENSE from Lexington, Massachusetts, painting by the late *Elsie Louise Shaw;* FIG. 2, characteristic leaves from Shelburne, New Hampshire, July 30, 1924, *Walter Deane*. FIGS. 3–5, var. EDITORUM: FIGS. 3 and 4, flower and median leaves from TYPE; FIG. 5, flower from Butler County, Pennsylvania, *John Bright*, no. 6789. All figs. × 1.

TRILLIUM SESSILE L. GREENSVILLE COUNTY: rich woods along Meherrin River, below Emporia, *Fernald & Lewis*, no. 14,530, very abundant. Our first record from the Coastal Plain. See p. 383.

THE DWARF TRILLIUM OF SOUTHEASTERN VIRGINIA (PLATES 772 and 773).—In southeastern Virginia the genus *Trillium* is so very local and scarce that in ten seasons of field-work I had never met any member of the genus there growing wild until Mr. Lewis and I came upon the extensive colony of *T. sessile* above noted. I had, however, reported in RHODORA, xlii. 445 (1940) the occurrence in the Great Dismal Swamp of a plant which I then misidentified as *T. lanceolatum* Boykin; Professor Smart had told me of the occurrence near the University of Richmond of a scarce plant thought to be *T. pusillum* Michx., this discovered in May, 1931; and in the Gray Herbarium there is, under *T. pusillum*, a sheet of exactly similar material from near Powhatan Creek in James City County, discovered by *Mrs. W. G. Guy* and *Dr. Stetson*, also in early May, 1931, and sent to the Gray Herbarium by Professor Warren. Furthermore, Mr. Lewis told me of a station in Dinwiddie County which had been shown to Mrs. Laura H. Lippitt by the friend who had discovered it. From this station, rich loamy woods near a stream in company of Royal Fern, Sensitive Fern and Lady-fern and *Medeola* (a very frequent association), Mrs. Lippitt has sent me a beautiful series of freshly flowering specimens, with the note that the petals are white, turning pink and then dark purple.

Altogether, the dwarf *Trillium* has a considerable, though highly localized, occurrence in the southeastern counties of Virginia; and, in identifying the Meherrin River *T. sessile*, it became quite apparent that the tiny plant is all of one distinctive species and that it is neither *T. lanceolatum* nor typical *T. pusillum*. The latter, *T. pusillum* Michx. (PLATE 772), was described as having the leaves sessile, the flower peduncled and erect, the sepals scarcely longer than the petals, the petals pale flesh-color; and it came from pinelands of South Carolina. The Michaux material (our FIG. 1) well agrees with this description and the label gives the further information: "35 m. de Charlest. environ Gaillard road". Just such a plant, FIGS. 2 and 3, is known from eastern South Carolina. It has the flower long-peduncled, the

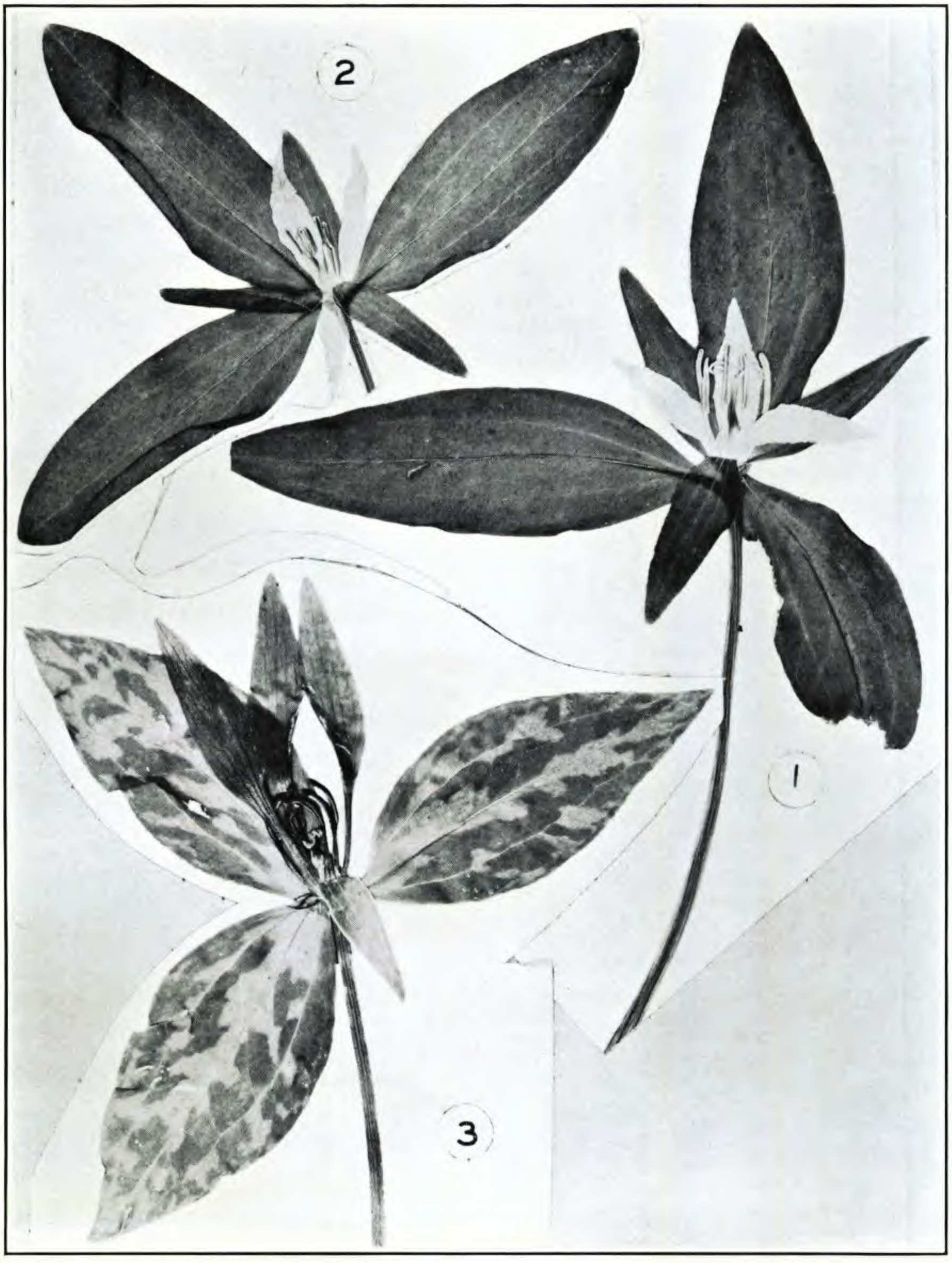

Photo. B. G. Schubert.

TRILLIUM PUSILLUM var. VIRGINIANUM, TYPE, × 1: FIG. 1 with long anthers, FIG. 2 with short anthers

T. LANCEOLATUM, × 1: FIG. 3, summit of flowering plant

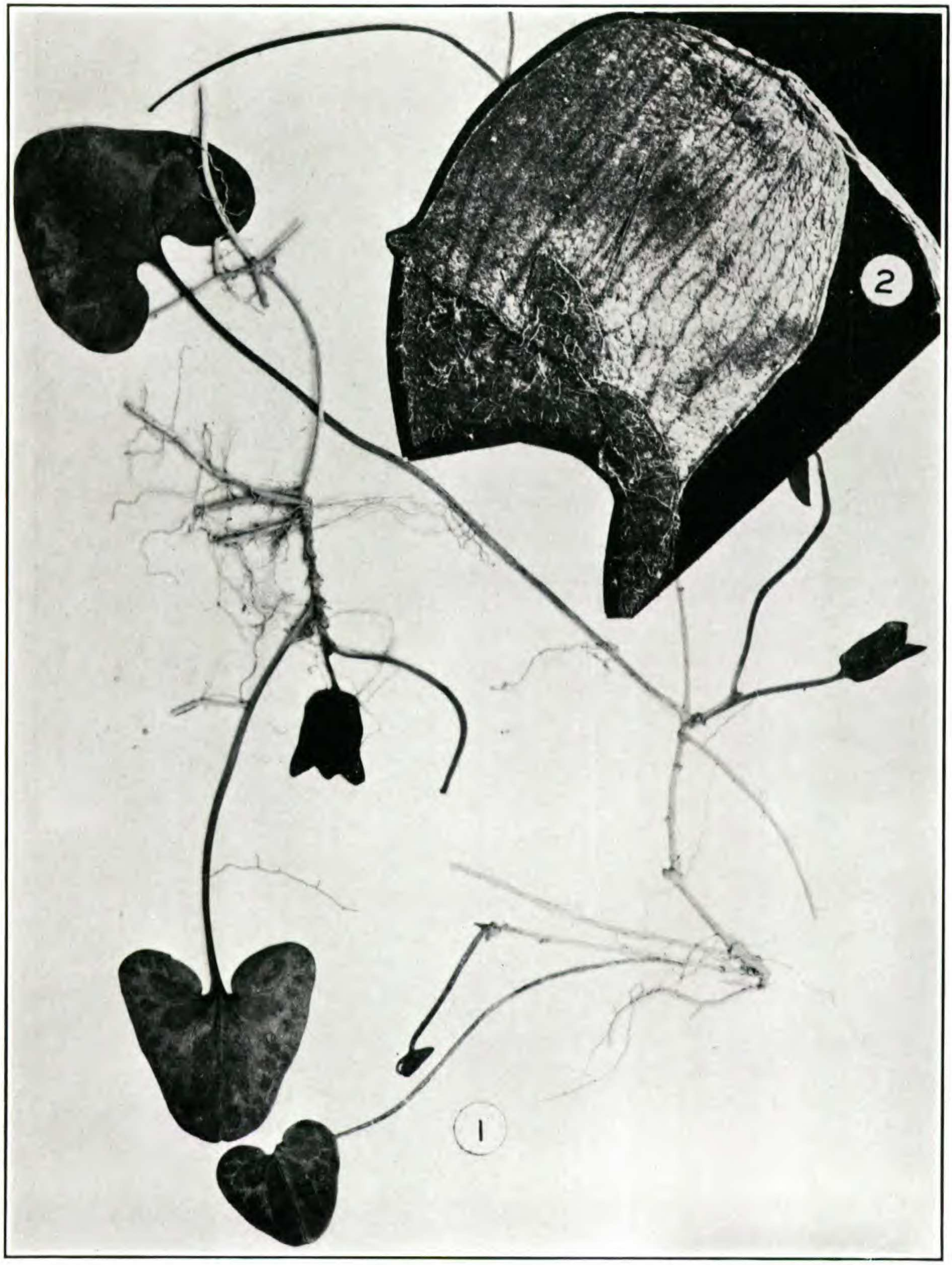

Photo. B. G. Schubert.

ASARUM LEWISII, from TYPE-series: FIG. 1, two plants, × ½; FIG. 2, expanded flower, × 3

petals about equaling or even longer than the sepals, 1.8–2.5 cm. long and 4–9 mm. broad; the anthers sometimes 5–6 mm. long, definitely longer than the filaments, or in otherwise typical South Carolina plants only 3 mm. long and definitely shorter than the filaments. The plant of southeastern Virginia (PLATE 773, FIGS. 1 and 2) looks like *T. pusillum*, but its flowers are sessile or elevated on a peduncle up to only 5 mm. long. If the latter embarrassing individuals are excluded, it is one of the "sessile-flowered" species; if they are taken into account it is a species with peduncled ("pediceled") flowers, a bit awkward in key-making. Its petals are mostly shorter than the sepals, 1.2–2 cm. long and 3–5 mm. wide, the anthers 3–8 mm. long and only slightly if at all longer than the filaments.

In view of the inconstancy in length of anthers and the overlaps in other characters I am treating the plant of Virginia as a geographic variety of *Trillium pusillum*, rather than as a distinct species. The sessile flowers of most Virginia material were responsible for one collection being placed with *T. lanceolatum*. That more southern species, however, has the sepals soon reflexed and the long and tapering petals (our PLATE 773, FIG. 3) with slender claw-like bases. The Virginia plant is

TRILLIUM PUSILLUM Michx., var. **virginianum,** var. nov. (TAB. 773, FIG. 1 et 2), a var. typicum recedit flore sessile vel subsessile; petalis 1.2–2 cm. longis 3–5 mm. latis, antheris 3–8 mm. longis.—Southeastern VIRGINIA: Henrico County: damp woods north of Westwood Golf Course, May 8, 1931, *R. F. Smart & Elmer C. Pritchard* (Herb. Univ. of Richmond); woodland north of University Road, Westwood, May 8, 1931, *Mary E. Billings.* JAMES CITY COUNTY: Long Hill Swamp, Powhatan Creek on Centreville Road west of Williamsburg, discovered by *Mrs. W. G. Guy and Dr. Stetson,* coll. May 3, 1931, by *Paul A. Warren.* NORFOLK COUNTY: Great Dismal Swamp, west of Wallaceton, April 24, 1926, *Paul A. Warren,* no. 413. DINWIDDIE COUNTY: rich loamy woods near stream, 5 miles east of Dinwiddie Court House, May 9, 1943, *Laura H. Lippitt* (TYPE in Herb. Gray.).

In view of the evident dimorphism as to length of anthers in both typical *Trillium pusillum* and its var. *virginianum*, it is evident that too much weight has been placed upon the length of anthers in the group. See p. 364.

PLATE 772 is of TRILLIUM PUSILLUM Michx., × 1: FIG. 1, Michaux's TYPE, original photograph by *Cintract;* FIG. 2, plant from Pinopolis, South Carolina,

April, 1897, *Maria P. Ravenel;* FIG. 3, plant from Pinopolis, May, 1895, *E. Peyre Porcher.*

In PLATE 773, FIGS. 1 and 2 are from the TYPE-collection, × 1, of T. PUSILLUM, var. VIRGINIANUM, n. var.; FIG. 3, summit of T. LANCEOLATUM Boykin, × 1, from Aspalaga, Florida, April 11, 1902, *Biltmore Herb.*, no. 6085.

*NARCISSUS BIFLORUS Curtis. ISLE OF WIGHT COUNTY: rich calcareous wooded slopes by Burwell's Bay, James River, below Rushmere (Fergusson's Wharf), *Fernald, Long & Abbe*, no. 14,130 Originally spread from cultivation.

CALOPOGON PALLIDUS Chapm. Range extended northward in ISLE OF WIGHT COUNTY: clearing in damp sandy pine barrens south of Zuni, no. 14,320. See p. 369.

*ULMUS PROCERA Salisb. CAROLINE COUNTY: steep wooded bluff by Rappahannock River, northwest of Return, *Fernald, Long & Abbe*, no. 14,136. See p. 358.

*ASARUM (§ HETEROTROPA) **Lewisii,** sp. nov. (TAB. 774 et 775), glabrescens; caule gracili subterraneo pallido valde elongato (ad 4 dm. longo), furcato ramibus stoloniferis; foliis longe-petiolatis solitariis coriaceis plus minusve maculatis deltoideis vel deltoideo-ovatis vel subreniformibus obtusis, sinu basalari rotundato, laminis maturis 2–8 cm. longis 2.5–8.5 cm. latis; flore pedunculato subnutante, calyce campanulato extus glabro griseo-brunneo, intus atropurpureo villoso, 2–3 cm. longo 1.3–2 cm. diametro, lobis vix patentibus.—Southeastern Brunswick County and southwestern Greensville County, VIRGINIA: bottomland-woods along Rattlesnake Creek, west of Triplett, Brunswick County, October 11, 1942, *Fernald & Lewis*, no. 14,480; sandy loam in woods along Whiteoak Creek, near Triplett, April 23, 1943, *Fernald & Lewis*, no. 14,531; mixed woods along Rattlesnake Creek, below Wright's Bridge, April 24, 1943, *Fernald & Lewis*, no. 14,532 (TYPE in Herb. Gray.); mixed woods along Rattlesnake Creek north of Ankum, Brunswick County, May 24, 1943, *Lewis*, no. 3825; bottomland-woods along Fontaine Creek west of Barley, Greensville County, May 17, 1943, *Lewis;* along Pea Hill Creek about a mile north of Gasburg, Brunswick County, May 29, 1943, *Lewis*, no. 3826. See pp. 374, 381–383.

In some ways combining the characters of our two eastern American sections of the genus. It has the deltoid to ovate or reniform, evergreen and often mottled leaves much as in *A. arifolium* Michx. or in *A. Ruthii* Ashe; while the extensively creeping and stoloniferous stems fork as freely as in *A. canadense* L., but they are subterranean, not superficial, much more slender, and bearing the scattered leaves singly along the axes and at the tips of the widely creeping stolons. Mr. Lewis had found only sterile plants, always in colonies on bottomlands or just above

the bottomland-levels of small creeks of southeastern Brunswick County, Virginia, which empty into Fontaine Creek and, eventually, into Meherrin River. In October, 1942, I had the great pleasure of visiting the Seward Forest, as the guest of the Director, Professor Alfred Akerman and Mr. Lewis, and when they showed me the strange *Asarum* it was, as Mr. Lewis had written, characteristic of the thin bottomland-woods just above creek-margins and where, during high water, it is regularly overflowed. It is colonial, making extensive colonies, with the rather small deltoid to ovate long-petioled leaves scattered (one-at-a-time), never in tufts.

In late April of 1943 I again was a guest at the Seward Forest, for Mr. Lewis had written that he had discovered a few flower-buds on different colonies, the very young buds showing some weeks after *A. canadense* and *A. virginicum* had begun blooming. On April 23, Dr. Akerman, Mr. Lewis and I found a few fully expanded flowers and several very young buds, usually only one fertile plant amongst hundreds of sterile ones, along Whiteoak Creek, near Triplett, and next day about the same meagre proportion of buds and fully grown flowers at the bases of gentle slopes to Rattlesnake Creek, these chiefly among fallen beech-leaves. And on April 26, when I had to be driven to Emporia to take the train back to Boston, we conceived the idea, since both Whiteoak and Rattlesnake Creeks empty into Fontaine Creek, one of the choice habitats of Greensville County to the east, of trailing the new species down that valley into the Coastal Plain. The first crossing to the eastward in Greensville County reassured us, for along Fontaine Creek, not far from its receipt of Rattlesnake Creek, near Barley, Mr. Lewis promptly detected a colony. That was the last we saw. Later, however, Lewis trailed it to Pea Hill Creek, which empties into the Roanoke River, his station being 10 miles farther west than those near Triplett. We are, then, forced to consider the new species as a highly localized one of southern Brunswick County and southwestern Greensville County.

Although as extensively creeping as *Asarum canadense*, its resemblance stops there. In foliage *A. Lewisii* is, as stated, related to *A. arifolium* and to *A. Ruthii* of *Asarum*, § *Heteroptropa* (the genus *Hexastylis* Raf., Small and their followers),

while its large drab-brown to drab-purple, campanulate calyx is nearly as large as in *A. Shuttleworthii* J. Britten (southwestern Virginia, Tennessee and Alabama), but with the outline of that of *A. virginicum*. In all these characteristic species of *Asarum*, § *Heterotropa*, the rhizome is stout and short, covered heavily with thick and very elongate roots and at summit forking into ascending crowns bearing tufted leaves. The new *Asarum Lewisii*, with which it is a great pleasure to associate the name of its discoverer, the perennially enthusiastic naturalist of the Seward Forest, John Barzillai Lewis, is unique in the section in its prolonged, slender, horizontal, subterranean, cord-like whitish rhizomes with few slender roots, the axes and the stolons bearing only scattered leaves. With this very effective vegetative reproduction and inhabiting bottoms where the plants are frequently submerged, *A. Lewisii* seems to flower (and then very sparingly) only when the colonies, as in late April and May of 1943, remain unsubmerged during the normal flowering period.

No fruit seems to form and the fragile peduncle readily breaks, even when the flowers are only partly grown.

Paronychia riparia Chapm. Limit of range extended northeastward in Southampton County: dry sand of open alluvial flat by Blackwater River, southeast of Unity, no. 14,324. See p. 370.

P. canadensis (L.) Wood. Local range extended eastward into Isle of Wight County: rich wooded slope above bottomland woods along Blackwater River, above Broadwater Bridge, north of Zuni, no. 14,325.

Holosteum umbellatum L. Apparently spreading; new or sandy roadside-fills in Essex and Hanover Counties. Perhaps introduced in foreign seed used on new soft shoulders. See p. 359.

Stellaria media (L.) Cyrill., var. glaberrima G. Beck. See Rhodora, xlii. 451 (1904). Add a station in Isle of Wight County: turfy waste ground back of sand-beach of Burwell's Bay, James River, below Rushmere (Fergusson's Wharf), *Fernald, Long & Abbe*, no. 14,142. See p. 360.

Cerastium brachypetalum Desportes. Local range extended north to Stafford County: roadside-fill about 4 miles southeast of Falmouth, *Fernald, Long & Abbe*, no. 14,144. See p. 358.

*Nymphaea odorata Ait., forma rubra Guillon. Sussex County: in water at margin of Chappell's Millpond (Honey Pond), west of Lumberton, no. 14,327, growing with the common white-flowered form.

Cabomba caroliniana Gray. Nansemond County: ditch

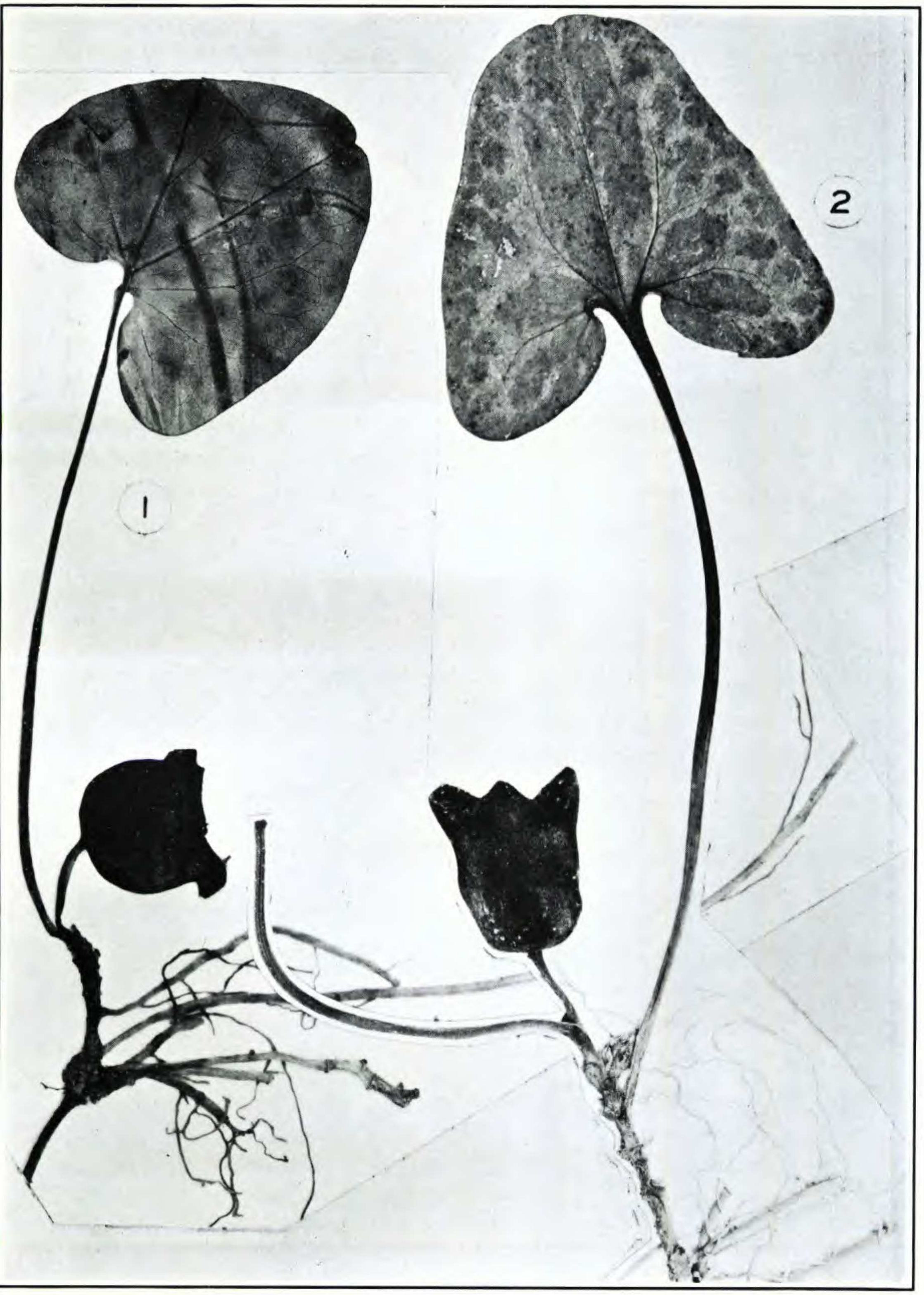

Photo. B. G. Schubert.

ASARUM LEWISII: FIGS. 1 and 2, portions of two flowering plants of TYPE-series, × 1

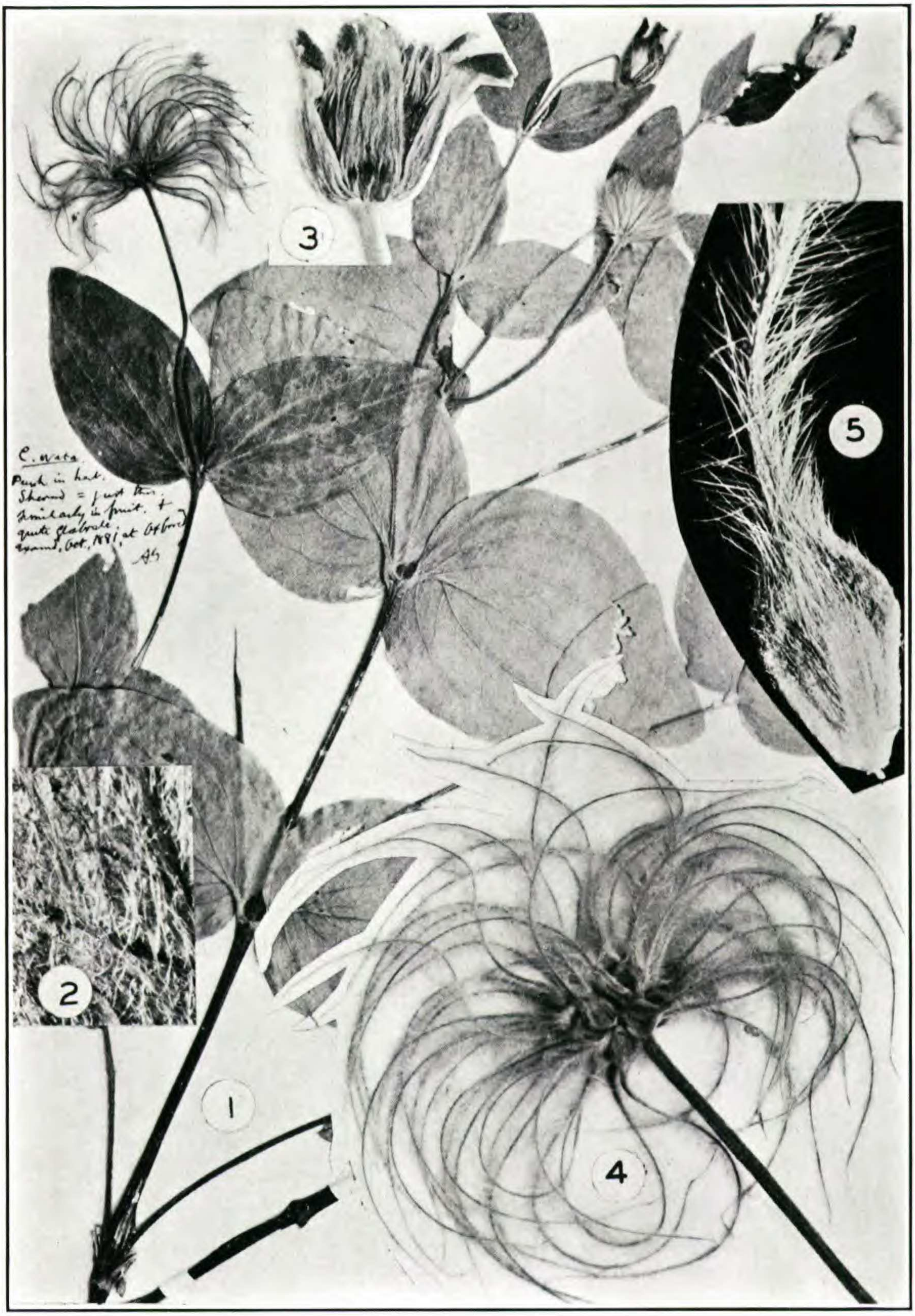

Photo. B. G. Schubert.

CLEMATIS OCHROLEUCA: FIG. 1, plant, × $^2/_5$, from Staten Island, N. Y., identified by comparison by Asa Gray with type of *C. ovata* Pursh; FIG. 2, lower leaf-surface, × 10; FIG. 3 flower, × 1; FIG. 4, fruiting head, × 1; FIG. 5, achene and base of tail, × 5

along highway, northern border of Great Dismal Swamp, east of Magnolia, no. 14,328. Our first station in the Tidewater counties. See p. 368.

RANUNCULUS ABORTIVUS L., var. INDIVISUS Fernald. STAFFORD COUNTY: disturbed soil at border of rich woods about 3 miles southeast of Falmouth, *Fernald, Long & Abbe,* no. 14,148. First except along Nottoway River. See p. 358.

R. SARDOUS Crantz. Local range extended into SUSSEX COUNTY: siliceous and argillaceous fallow field, Jarratt, *Fernald, Long & Abbe,* no. 14,151. In view of the dominance of this species in fields and pastures about Franklin, likely to spread rapidly.

MORPHOLOGICAL DIFFERENTIATION OF CLEMATIS OCHROLEUCA AND ALLIES (PLATES 776–782)—The simple-leaved and erect species of *Clematis,* of which *C. ochroleuca* Ait. Hort. Kew. ii. 260 (1789) was the first American one described, has had many treatments. So far as I can find there is no clear demonstration of the identity of the plant described by Aiton. It was cultivated in England and very briefly described, the name given on account of the color of the sepals. It is and has been assumed to be the most eastern of species, found chiefly in the Piedmont and inner Coastal Plain region from southeastern New York to southeastern North Carolina and the mountains of northern Georgia. Until Aiton's material is checked, with the real morphological distinctions in the group clearly in mind, the established interpretation should not be disturbed. It is evident, certainly, that the Plukenet plant from Banister cited by Aiton "flore unico ochroleuca" is the plant generally known as *C. ochroleuca.* Plukenet's figure is characteristic.

My object in this note is to define on more stable and fundamental lines than are relied upon in the two latest treatments, the eastern species of *Clematis,* § *Viorna,* sub-§ *Integrifoliae.* The latest treatment, that of Erickson in Ann. Mo. Bot. Gard. xxx. 13 and 35–39 (1943), keys our species in a manner quite reminiscent of the key of Wherry in Journ. Wash. Acad. Sci. xxi. 195 (1931). Wherry's key was as follows:

"Plant sparingly branched and small leaves relatively few; head of fruit tending to be spherical, about 6 cm. in diameter; achenes nearly symmetrical.
Under side of leaves glabrate to moderately pubescent; hairs of achene-appendages deep, or exceptionally pale, yellow; range chiefly at altitudes below 1000 feet, mostly in Piedmont..... **C. ochroleuca ovata**

Under side of leaves moderately to densely pubescent; hairs of achene-appendages pale, or exceptionally deep, yellow; range chiefly at altitudes above 1000 feet, mostly in Blue Ridge ..... **C. ochroleuca sericea**

Plant copiously branched and small leaves relatively numerous; leaves glabrate.

Head of fruit nearly spherical, about 5 cm. in diameter; achenes fairly symmetrical, their appendage-hairs brown ..... **C. viticaulis**

Head of fruit spheroidal, about 4 cm. high and 6 cm. broad; achenes rather unsymmetrical, their appendage-hairs whitish ..... **C. albicoma**"

As above stated, the latest monographer of the section gives in his key no more fundamental distinctions than these and leans primarily on the evasive and contradictory degree of branching (note the contradiction in his "EE" and its subordinate "FF", below) and the still more evasive degree of coloring (note "EE" with "achene-tails usually lighter in color" as contrasted with "E" in which the color is "reddish-brown", the first species under the "lighter . . color" being *C. ochroleuca* in which the tails (styles) may be "tawny". Here is Erickson's statement of the "specific" differences:

"E. Plant profusely branched; leaves lanceolate, less than 6 cm. long; sepals glabrous; achene-tails reddish-brown ..... 13. *C. viticaulis.*

EE. Plant less branched; leaves ovate, at least some of them more than 6 cm. long; sepals pubescent; achene-tails usually lighter in color.

F. Plants simple or few-branched, more or less pubescent; achene-tails light yellowish-brown to tawny ..... 11. *C. ochroleuca.*

FF. Plants usually much branched, often white silky-pubescent throughout; achene-tails whitish or pale yellow ..... 12. *C. albicoma.*"

Not having the field-familiarity of Dr. Wherry with *C. albicoma* and *C. viticaulis*, I have been forced to my interpretation of these two treatments thus handicapped. By following the above keys I arrive at very perplexing results, for the characters depended upon are such as vary with extreme plasticity; and, whereas Erickson says in his key that the leaves of *C. viticaulis* are "lanceolate" as opposed to "ovate" in *C. ochroleuca* and *C. albicoma*, his fuller account of *C. viticaulis* says "leaves lanceolate to narrowly ovate", the other two species being assigned leaves which may also be "narrowly ovate".

As to the degree of branching so much relied upon in the two treatments, I, again, have been handicapped by not having

before me all the material their authors studied, except that in the Gray Herbarium, which was borrowed by Erickson. I have, however, had the great advantage of studying a large series of specimens from the Blue Ridge in Roanoke County, Virginia, most kindly sent me for study by Mr. Carrol E. Wood, Jr. Taking into consideration only the plants which are complete down to the lowest node (omitting obviously broken-off branches) I get the following results.

NUMBER OF BRANCHES FROM MAIN AXIS

C. OCHROLEUCA, "plant sparingly branched" or "simple or few-branched" (47 plants): branches 0=13 specimens; 1=1; 2=5; 3=4; 4=7; 5=6; 6=7; 7=3; 9=1. Average 3.2 branches.

C. VITICAULIS, "plant copiously" or "profusely branched" (7 plants): branches 0=1; 2=1; 4=2; 5=1; 6=1; 8=1. Average 3.4 branches.

C. ALBICOMA, typical glabrescent plant, "copiously" or "usually much branched" (19 specimens): branches 0=4; 3=1; 4=2; 5=5; 6=3; 7=1; 8=3. Average 4.5 branches.

C. ALBICOMA, tomentose var., "plant copiously" or "usually much branched" (36 plants): branches 0=4; 1=4; 2=5; 3=8; 4=6; 5=4; 6=3; 7=1; 8=1. Average 3.2 branches.

With more than half of the complete plants of the "simple or few-branched" *C. ochroleuca* (PLATE 776, FIG. 1) having 4–9 elongate axillary branches, while the "profusely" or "usually much branched" species show nearly half the plants with less than 4 branches, I am quite incapable of applying the character as a clear diagnostic one or even a worth-while tendency.

As to leaf-outline and size one also has to be pretty cautious. The sheet of *Adams & Wherry*, no. 2413, from the type-locality of *Clematis viticaulis*, defined in Erickson's key as having "leaves lanceolate, less than 6 cm. long", shows blades 6.5 cm. long by 3 cm. broad. As already noted, such leaves are narrowly ovate, rather then "lanceolate". Other topotypic specimens of *C. viticaulis* show primary leaves with the following dimensions: *Killip*, no. 32,484 (PLATE 778, FIG. 1), blades 7 cm. long; *Adams & Wherry*, no. 2418, blades 7.8 cm. long by 4 cm. broad; *Wherry*, June 11, 1930, blades 7 cm. long by 4.6 cm. broad, much more than "narrowly ovate". As a key-character "leaves lanceolate, less than 6 cm. long" is not wholly satisfactory, especially since, likewise, so many specimens of *C. albicoma* in the most restricted sense have leaves scarcely different in shape and size, topotypes (from Kate's Mountain) showing the largest leaves 6.2 cm. long

(*Gilbert*, no. 511), 6–6.5 cm. (*Marion S. Franklin*, September 4, 1920, our PLATE 779, FIG. 1), 6.2 cm. (*Small*, May 16, 1892), 7 cm. (*Hermann & Martin* in Pl. Exsicc. Gray., no. 951), 7 cm. (*Core*, no. 2708), 5.8 cm. (*Addison Brown*, July 22, 1892), while plants from near Deerfield, Augusta County, Virginia (*Wherry*, no. 2420), have the larger leaves only 4.5 cm. long. Here, again, those who hope for clarification find "a distinction without a difference".

In his key Erickson assigns *Clematis viticaulis* "sepals glabrous" as opposed to the pubescent sepals in the other plants. I hope they are glabrous; Steele, in describing the species, did not know them, and Wherry cited besides Steele's collection only his own from the type-locality, collected June 11, 1930. As shown by the two flowers of Wherry's plant in the Gray Herbarium, the sepals (PLATE 778, FIG. 2) are closely pilose. In fact, in his detailed description (p. 38) the "sepals glabrous" of Erickson's key were allowed to be "slightly pubescent without". Those of Wherry's topotype, however, are certainly less pubescent than in *C. albicoma* (PLATE 779, FIG. 4) or in *C. ochroleuca* (PLATE 776, FIG. 3).

As to the fruiting head, in Wherry's treatment that of *C. ochroleuca* is "tending to be spherical, about 6 cm. in diameter," that of *C. viticaulis* "nearly spherical, about 5 cm. in diameter" and that of *C. albicoma* "spheroidal, about 4 cm. high and 6 cm. broad". The abundant series of *C. ochroleuca* before me shows that the mature fruiting heads (PLATE 776, FIG. 4) range from 5–10 (average 7) cm. in diameter, with the long plumose styles loosely separated at the margin of the head, while in *C. albicoma* the mature head (PLATE 779, FIG. 1 and 780, FIG. 6) is compact, with tightly recurving plumose styles, the heads 4–7 cm. thick. The fruiting head of *C. viticaulis* (PLATE 778, FIGS. 1 and 3) is as small as in *C. albicoma* but with fewer and loosely spreading plumes (much as in *C. ochroleuca*). I am not sufficiently a mathematician fully to appreciate the differences between "tending to be spherical", "nearly spherical" and "spheroidal". According to the Century Dictionary a spheroid is "A geometrical body approaching to a sphere, but not perfectly spherical". Since in *C. ochroleuca* the fruiting head is "tending to be spherical" and in *C. viticaulis* only "nearly spherical" while in *C.*

albicoma it is "spheroidal" (i. e. "approaching to a sphere, but not perfectly spherical") this character is too erudite for me.

Similarly, the exact shades of difference between "nearly symmetrical", "fairly symmetrical" and "rather unsymmetrical" are difficult to visualize. Furthermore, the distinctions between "deep, or exceptionally pale, yellow", "pale, or exceptionally deep, yellow" are not wholly satisfactory. In characteristic *Clematis ochroleuca*, the easternmost plant, the mature plumes range from a deep, almost cinnamon-brown to whitish-yellow or pale buff, the range in color being comparable to that in the mature perianths of *Eriophorum virginicum;* and, although the plumes of *C. albicoma* are commonly whitish-gray or drab (on white paper they do not look "whitish"), the series of its more pubescent and relatively eastern variety sent me for study by Mr. Wood shows some numbers with plumes as brown as in average *C. ochroleuca*. Exactly the same range of color occurs in other species of § *Viorna*. In *C. Viorna* L. Erickson rightly allows the "achene-tails . . . light yellow or brownish". In some recently collected (therefore not faded) material before me (*Godfrey*, no. 5004 from Wake County, North Carolina) they are as pale as in extreme *C. albicoma*, while in other material (*Godfrey & Tryon*, no. 806 from Orangeburg County, South Carolina) they are as dark as in the most extreme *C. ochroleuca* or as in *C. viticaulis*. Color of hair, like the other characters used in recent keys, is not sufficiently stable to demonstrate that *C. ochroleuca*, *C. viticaulis* and *C. albicoma* are clear-cut species.

There are, however, some characters of deeper significance, which seem to show that *Clematis albicoma* and *C. viticaulis* are really separable. In fact, Erickson recorded the most significant characters in his descriptions of the three but these points, which are the strongest ones, were omitted from his key in favor of superficial and wholly inconstant ones. I refer to the great elongation of the fruiting peduncles in *C. ochroleuca* (PLATES 776 and 777), as opposed to the relatively short peduncles of the others, and to the very different direction of the pubescence on carpels and achenes. These characters are constant in all the material I have seen, without regard to degree of pubescence of stem and leaf, size of leaf, amount of branching and paleness or deepness of color of the coma. To me they are the soundest

differential characters, though not so easy to see without careful examination.

The white-silky or -tomentose plant (PLATE 780) concentrated on the Blue Ridge, of which Mr. Wood sends me a splendid series for study (largely as a loan) is evidently what Wherry had primarily in mind when he published the combination *C. ochroleuca*, var. *sericea* (Michx.) Wherry. Since it is not *C. sericea* Michx. (PLATE 777) and since its more stable characters are those of *C. albicoma*, to which Wherry often referred specimens and with which essentially glabrous and mostly more western plant (PLATE 779) Erickson merges this white-pubescent one of the Blue Ridge, I am redefining the latter. As I understand the three species and the variety, I treat them as follows:

a. Carpels and achenes with appressed pubescence, that at the summit pointing forward; lowest villi of the fruiting style ascending or spreading-ascending; fruiting head with styles loosely separated at margin.

Stems either simple or loosely branched, the branches only exceptionally overtopping the main axis; larger leaves of primary stem 6–12 cm. long, silky-pilose to glabrate beneath; flowers 2–3.5 cm. long, the cinereous backs of the sepals densely silky-villous; mature fruiting peduncle lengthening to 5–19 (av. 11+) cm., much overtopping the subtending leaves; mature fruiting head 5–10 (av. 7) cm. in diameter, the plumose styles 3–6 cm. long ..... *C. ochroleuca.*

Stems with axillary branches often overtopping the main axis; larger leaves of primary axis 5–7.8 cm. long, glabrescent beneath; flowers about 2 cm. long, the greenish backs of the sepals only minutely pilose; mature fruiting peduncles 1–5 cm. long, shorter than subtending leaves; mature fruiting head 4–5.5 cm. in diameter, the brownish plumose styles 2–3 cm. long .... *C. viticaulis.*

a. Carpels and achenes with horizontally divergent to reflexed long hairs on the upper half; lowest villi of the fruiting style similarly divergent; fruiting head with styles strongly arcuate-recurved, 3–5 cm. long, the head consequently compact; fruiting peduncles 3–9 cm. long; flowers 1.7–2.8 cm. long; central axis often or usually overtopped by axillary branches.

Main axis 2–3 dm. high, the stems loosely pilose but becoming glabrescent; leaves at first sparingly pilose on veins beneath, otherwise glabrous, soon quite glabrate, the larger ones 4–7.5 cm. long and 1.5–4.5 cm. broad ..... *C. albicoma.*

Main axis 2–4.5 dm. high, the stems densely and persistently pilose-tomentose; leaves persistently pilose-tomentose beneath, the larger ones 6–10 cm. long and 4–9 cm. broad ..... *C. albicoma*, var. *coactilis.*

Since the descriptions, ranges and citation of specimens of

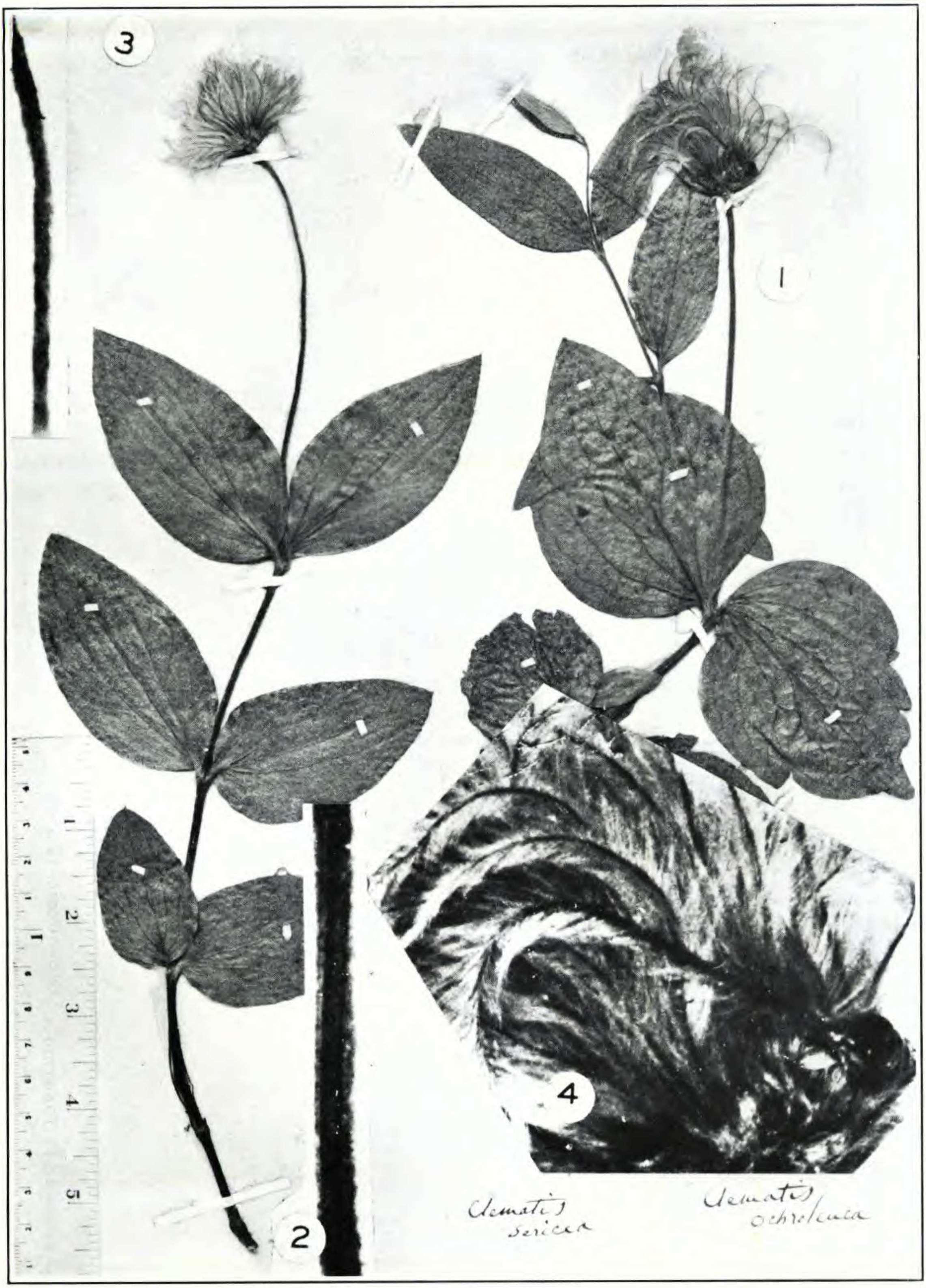

Photo. B. G. Schubert.

TYPE of CLEMATIS SERICEA Michx. = C. OCHROLEUCA Ait.: FIG. 1, two plants, × ½; from photograph by *Cintract;* fig. 2 stem, × 2½; FIG. 3, peduncle, × 2½; FIG. 4, tails of fruit, × 2½